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24-2-82

**GEOGRAPHY OF JAMMU & KASHMIR :
SOME ASPECTS**

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GEOGRAPHY OF JAMMU & KASHMIR (SOME ASPECTS)

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Foreword

IT is a matter of profound pleasure for me to note that the Department of Geography and Regional Development is hosting the 5th Annual Conference of the Indian National Cartographic Association. These conferences help the scholars of the host department to interact with distinguished scholars in the specialised field of the conference from all over the country. This exposure helps rapid academic growth of the department on right and modern lines.

The idea of bringing out an authentic publication on the habitat, economy and culture of the State of Jammu and Kashmir is most welcome. The State of Jammu and Kashmir is a unique cultural region in the remote north western corner of India. While politically a frontline State its unmatched scenic grandeur and invigorating climate have not been able to generate more than tourist interest in this state. The academic and research interest in the diverse cultures of the State and in its economic development have been only marginal.

The cultural splendour of its three regions viz., Ladakh, the Valley and Jammu are little known to even the Indians living outside the State. The series of articles published in this Volume focus on the topography of the State, the cultural traits of its people, their economic occupations, the haunting charm and scenic beauty of the land. This volume presents an authentic and fascinating account of the State of Jammu and Kashmir as the historians, geographers and scientists see it. This inter-disciplinary contribution to the understanding of the State and its people catches their ethos and spirit and therefore makes this volume an absorbing study.

(PROF. S. MANZOOR ALAM)
*Vice-Chancellor,
University of Kashmir
Hazratbal, Srinagar-6*

(MAY 1968)

W. A. R. 1890

Preface

THE present work 'Geography of Jammu and Kashmir : Some Aspects' is the outcome of the faculty's decision to publish a collection of articles on the major geographical themes of the Jammu and Kashmir State on the occasion of the Fifth Annual Conference of the Indian National Cartographic Association (INCA) to be held under the auspices of the University of Kashmir from 4-7 September. The initial idea of publishing a 'Souvenir' finally resulted into the publication of the present monograph, owing to the constant encouragement by the Vice-Chancellor, University of Kashmir and the untiring efforts of the teachers and staff of the Department.

The book is deals with the systematic and clear understanding of the physical and socio-economic structure of the richly endowed but relatively underdeveloped state of the Northern India i.e. Jammu and Kashmir.

The book opens with a brief chapter on the 'Stratigraphic Profile of the State' giving the physical stage of the region on which the increasing population is struggling to improve the quality of life and transforming the physical landscape at an unprecedented rate. The stratigraphic structure is followed by a concise account of the 'Indus Shyok Furrow' revealing the physiographic and regional characteristics of the peculiar furrow. The subsequent three chapters dealing with the Diffusion of Plants in the region, major types of flora, and the Changing Vegetation of Kashmir give a comprehensive picture of the vegetation-mosaic of the state in question. It has been underscored in these articles that the judicious use of the existing natural vegetation is imperative to maintain the ecological balance and to keep the eco-systems in healthy resilience condition. The *karewas* (lacustrine and fluvial deposits) utilised generally for the cultivation of saffron and orchards are the

distinct topographical features of the Vale of Kashmir which constitute a transitional zone between the Valley floor and the surrounding undulating *kandi* lands. A geographical interpretation of the *karewas*, their genesis, distribution and utilization has been given in the sixth article of the volume.

Chapter 11 starts with a discussion over spatial distribution of major the ethnic groups; origin, concentration, ethnic characteristics of Afghans, Hanjis and Scheduled Castes have been examined with the help of primary data generated by the authors. An indepth study of transhumance of Gujars and Bakarwals and seasonal migration, analysing the pull and push factors behind these factors have also been examined in two separate papers which are exclusively based on the data and information obtained by the authors by conducting field work. 'Geography behind the Religious Personality of Kashmir' and the Spatial Distribution of Muslim-Shrines help in understanding the socio-cultural ethos of the region. Moreover, update studies of the patterns of regional distribution of population, growth, processes and levels of urbanisation of the State have also been carefully examined, with a full paper giving the spatio-temporal growth of the city of Srinagar.

And, finally the Chapter 19 begins with a review over the dominant economic activities of the Jammu and Kashmir State. The trend and decomposition analysis of the agricultural growth in the state, the working conditions of child labour in carpet industry of Srinagar city, transport network efficiency in Jammu and Kashmir Divisions, pollution problem of the Dal Lake, Saffron-Ecosystem, problems and prospects of development of *kandi* tracts of Jammu Division, existing socio-economic conditions in Ladakh and tourism potentials in the state are the constituent chapters of this section. Almost all these papers may be said as original in nature as the data has been generated by the respective authors in the forms of structured questionnaires.

Extensive bibliography with references of technical literature has been given throughout the book. In addition, at the end of each chapter there is a list of references recommended for further reading, containing the most generally useful works for further exploration of the topic in the chapters.

On behalf of the faculty, Department of Geography and Regional Development, University of Kashmir, I must express

my deep sense of appreciation to the University of Kashmir and the various business establishments for providing generous financial support as the subsidy for the publication of the present monograph.

Professor S. Manzoor Alam, Vice-Chancellor, University of Kashmir, took personal keen interest to see the work published and released on the occasion of the Fifth INCA Conference. He deserves special thanks not only for writing the 'foreword' on the book but also for his perennial encouragement without which it would have been difficult to finish the task intime.

I feel personally indebted to all the contributors of papers who responded promptly to my call and contributed papers in short time on the assigned themes.

I would also like to express my deep appreciation to several other groups of people who contributed substantially to the creation of this monograph. First to my colleagues, who not only contributed papers for the book but helped me in going through the papers, maps and diagrams. Second to the technical and supporting staff who facilitated its development and production, especially, Miss. Ghadir Fatima, Mr. Khurshid Anwar, Miss Ulfat, Mr. Ab. Majeed Wani, Mr. G.M. Sheikh and Shri A.K. Raina. Third the publisher and the designers at the **Ariana Publishing House**, Inderpuri, New Delhi-110012, whose dedication and sincerity were crucial for publishing the book in only thirty days time.

To these all and other individuals including my family, I express my sincere gratitudes for their forbearance and moral support which helped in producing the work in a record time.

July 25, 1985

PROF. MAJID HUSAIN

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PROF. MAHMOUD HUSAIN

July 22, 1982

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Stratigraphic Profile of Jammu & Kashmir State

T.A. KANTH*

GEOLOGICALLY speaking, the State of Jammu and Kashmir has its own importance. The region has undergone many changes in geological times. The territories of the state fall within the geological history of mountain building movements in the northern India. The Valley of Kashmir formed part of the geosynclinal Tethys even upto the Permian Time, when it was a region of a calm and quite sedimentation it suffered many violent changes. The mountain wall abruptly rising on sides presents a varied geological scenery in its stratified records. Thus, the Valley of Kashmir in spite of the fact that it covers a very small area presents a rich field of study for geologists to whom its field study reveals one of the finest developments of the stratified records of all ages from Archean and Precambrian onwards to Tertiary and Recent Times. The Jammu hills are no less important and one can study the Siwaliks, the Murrees, the Dogra States, the marine Eocene rocks etc. in these hills.

The State also presents an interesting morphology. It has no physical monotony to tire the eye. The particular charm is its

*Mr. T.A. Kanth is a lecturer in the Department of Geography and Regional Development, University Kashmir, Srinagar.

sudden rise in altitude which lends it a changing colour of flora and fauna.

The State of Jammu and Kashmir lies between 32.17 and 36.58 North Latitudes and 73°.26 and 80°.26 East Longitudes and is situated in that transverse segment of the Himalayas which is known as the Punjab and Kashmir Himalayas. The State of Jammu and Kashmir enjoys its own significance claimatically, scenically, historically, strategically and the last but not the least geologically. The Valley of Kashmir presents a rich field of study for Earth Scientists. In spite of its small geographical area it carries one of the finest developed sequence of rocks right from Archean Times to Recent Times.

The State actually extends over an area of 228070 Sq. Kms., but according to the provisional estimates the area along the 'Actual Line of Control' is 138134 Sq. Kms. forms the part of the Indian Territory. Of the actual area in India's command, Ladakh alone covers 70%, Jammu 19% and the Kashmir region accounts for the remaining 11%. The state has no physical monotony but presents an interesting morphology which lends it a changing colour.

Morphological Divisions of State

Morphologically the State is divided into three distinct regions; Jammu, Kashmir and Ladakh. Jammu Division consists mostly of the sub-mountain and semi-mountainous tract contiguous to the Punjab and broken *Kandi* areas skirting the Pir-Panjal ranges as also the outer hills south of the mountain ranges commonly known as the Siwaliks; below the hills in the outer plain-area constituting parts of Kathua, Hiranagar, Samba and R.S. Pora which consists of plain lands upto an altitude of about 1200 feet above the sea level. The geological structure of the semi-mountainous part is rather complicated as compared to the sub-mountain part and is mostly composed of unsymmetrical folds like overfolds, isoclinal folds and recumbent folds. The area also has some overthrusts like Murree thrust. River Chenab and its tributaries form the main drainage of the division.

Pir-Panjal mountains divide the Division of Jammu from the Kashmir, and begin from the South East at the Chenab

river ending on the North-West. Towards the North, these ranges gradually attain greater heights extending upto 1500 feet and rise like a wall to enclose the Valley of Kashmir from its Southern end. On the opposite end of the Valley is a lofty range of mountains Neste-Chune (9350 ft.) on the way of Karnah, Razdani pass (11500 ft.) between Bandipora and Gurez Hatmukh (16900 ft.), Mahadev (11500 ft.) etc. Bounded by these sentinels of nature is the valley of Kashmir—the most extensive and picturesque valley of the world. It is spindle-shaped and flat-bottomed Valley about 128 Kms. Long and 40 kms. wide and ranges in altitude from 5,200 feet to 6,000 ft. above the Sea level. In terms of geological structure the Pir-Panjal ranges are very complex mostly having reversed folds and faults. River Jhelum and its tributaries form the drainage of the division.

Further right to the East is the vast mountainous territory of Ladakh, extending from Zanskars in the South to the Karakoram, the Nun-Kun, the Nanga-Parbat etc in the North. Bounded in by these high mountains, the Valley of Indus (Ladakh) is almost a plateau desert by the large devoid of vegetation with an average altitude of 12000 feet above the sea level. The Indus rising from Mansarover lake flows through the division and takes a sharp Souht-Westerly bend near Nanga-Parbat giving rise to Indus gorge.

Stratigraphy of the State

The main characteristics of stratigraphy of the State were first formulated by Lydekker (1883). He was followed by Middlemiss (1910), Burrard (1931), Wadia (1926) and others. The account given in the following pages gives an idea of classification, correction and interpretation of stratified rocks and of geological records as observed in the state.

Archaean Group

The Archaean group/system includes the oldest rocks of the earth's crust that exhibit very complex structural deformations. It includes granites, gneisses and schists occurring largely in the

North-Western Kashmir, Nanga Parbat, Zaskars and Ladakh occupying the cores of these mountains. These were called 'Central-gneiss' by Stoliczka. Their occurrence has also been encountered in the South of Pir-Panjal in Kishtwar and Bhadarwah extending westwards to Rampur in Kashmir. Debate about their age remained for quite a time and a group of geologists including MacMahon considered these gneisses not of Archean age but are intrusive in origin which have intruded into the rocks of various ages. This view, however, has not been established. Gneisses and schists part are believed to be Precambrian and have been termed as "*Salkhala series*," from their occurrence from a village near Karan. Their origin has been established as the metamorphic and not igneous by the presence of minerals like kyanite, staurolite, garnet etc.

Purana Group (The Precambrian)

This includes those rocks that were formed after the close of Archean System. It includes slates, phyllites, hornfels and quartzites belonging to Cuddapah and Vindhyan Systems. The slates are partly carbonaceous, highly broken at places and finely cleaved, occurring between Ramban and Ramsu. The entire formation has been designated as the '*Dogra Slates*.' These slates are metamorphosed to phyllites as they approach the salkhalas and depict foliated structure.

Dravidian Group (Palaeozoic)

The Dravidian group of rocks is extensively developed in the Kashmir. Overlaying the Dogra Slates of Purana Group is a belt of rocks termed as the '*Tanawal Series*'. The rocks may vary in age from Pre-Cambrian to Permo-Carboniferous. A brief description of each system is given below :

Cambrian

There are four well known areas in Kashmir where fossiliferous Palaeozoic rocks of Cambrian age are identified. These areas are—Liddar Valley, the Vihi region east of Srinagar, the thin band of rocks between Sumbal and Bandipur along the

right bank of Jhelum and the Handwara area. The interesting localities where these rocks can be easily studied are Zewan, Risin Pahalgam Ajas and Zavar. The rocks are argillaceous silicems and micaceous slates with compacted arenaceous and calcareous beds generally known as greywackes.

Ordovician

The hills in the vicinity of Handwara consisting of greywackes, slates and flaggy limestone with few evidences of fossils, belong to the Ordovician period. The few fossils that encountered are Lingulella (Brachopoda) and Michodiscus (Trilobite).

Silurian

A thin but continuous band of Silurian rocks have been identified from Aishmaqam in Liddar Valley to Latherwan in the Wordwan Valley. The rocks are arenaceous shales, argillaceous sandstones and impure limestones containing various fossils like Orthis, Atrypa, Strophomena (Brachiopoda) Calymena, Phacops, Illanus (Trilobites) and Orthoceras (Cephalopode).

Devonian

The Devonian of Kashmir lies conformably over the Silurian rocks in both the blanks of Liddar-anticline as thick beds of unfossiliferous quartzites, known as Muth quartzites. Its occurrence has also been noted on the Southern flanks of Pir-Panjal. The rock shows cross-beddings indicating its sedimentary origin.

Lower Carboniferous

The flaggy limestone of greyish colour lies conformably over the Muth quartzites, of Devonian age in Aishmaqam and Kotsu. These limes tones are highly fossiliferous, the predominant fossil being the Syringothyris Cuspidata (Brachiopoda) and for that reason, they are designated as the syingothyris limestones. Few other fossils like productus, chonetes, athyris (Brachiopoda)

and *Phillipsia* (Trilobite) have also been identified in these limestones.

Middle Carboniferous

Overlying the syringothyris limestone is dark coloured shales unfossiliferous quartzites of about 1750-2500 feet thick of Middle Carboniferous Age. The shales are highly fossiliferous and the index fossil being *Polyzoa Fenestella* and formation has been designated as the '*Fenestella shales*'. Their distribution is mainly confined to Lehindajjar to the leftside of the Liddar Valley.

The Aryan Group

The development of Palaeozoic sequence in Kashmir is more or less continuous up to the Middle Carboniferous, after which there is a clear evidence of a break in deposition accompanied by many other changes—or what we can express by unconformity (known as Maid-Palaeozoic unconformity). This is mainly due to the fact that the whole of Kashmir including the Pir-Panjal area was violently disturbed by a series of volcanic outbursts that lasted for the whole of the Upper Carboniferous. These large scale eruptions of lava were witnessed after the deposition of the *Fenestella* shales and resulted in thick accumulation of what is known as '*Panjal Series*' which have been assigned an Upper Carboniferous age.

The Panjal-Series is divided into lower '*Agglomeratic slate*', sub-division chiefly composed of black and grey agglomeratic slates, and an upper lava composed division termed '*Panjal Traps*' which consists chiefly of basaltic rocks, mainly andesitic in nature remains of productus, *Spirifera Leptaena*, *Fenestella* are found in the slate.

The Lower Gondwana Beds

At many places like Banihal and Bijbehara the Panjal-traps have been passing upwards quite conformably into black and grey coloured siliceous and carbonaceous fossiliferous shales known as '*Gangamopteris beds*' from their containing rich assemblage of plant fossils of *Gangamopteris* and

Glassopteris flora. The beds are distinctly of fluviatile origin and their age is regarded as Artinskian (Basal Permian). They are very important from stratigraphical point of view because they have been accepted as defining the lower limit of Gondwana System.

Permian

The Permian deposits, composed chiefly of highly fossiliferous limestones and shale overlie the Gangamopteris beds at many places in Kashmir. They are known by the name of 'Zawar Series' from a village of that name near Srinagar where they were first studied. They yield very rich assemblage of fossils of brachiopods, Lamellibranches and ammonites. An outcrop of Permian-Age is also exposed near Jammu. It extends from Katra to bedded Poonch and consists of thickly limestones very much dolomitised and unfossiliferous.

Triassic

This basal system of Mesozoic Era succeeds the Permian rocks in the valley. These triassic rocks are very extensively developed and can be traced very easily along the flanks of Pir-Panjal in Liddar Valley, Wardhwan Valley and Gurez Valley as also along the north of Jhelum. The system is chiefly composed of homogenous, compact, light blue limestones with some beds of shales in the Lower Triassic. The system has been divided into Lower, Middle and Upper Triassic divisions; each of these divisions is further distinguished into different zones on the basis of fossils, chiefly Ammonites Brachiopods and Lamellibranches. The zones are given below :

Division	Zones
Upper	Massive Limestones (Unfossiliferous) 'Spiriferina' Limestones Lamellibranch zones "Ptychites" Zone "Ceratite" Zone
Middle Triassic	"Rhynchonella" Zone "Gymites and ceratite" Zone

Nodular limestone
 "Hungarites" shales
 "Meakoceras" Limestones & Shales
 Lower Triassic "Ophiceros" Zone
 "Octoceras" Zone

Passing from the Permian to the Triassic a marked change in life has been observed. The brachiopods that dominated the Permian seas were replaced by the ammonites in the succeeding Triassic times.

Jurassic

Jurassic rocks have been traced in Ladakh and Banihal. In Banihal they occur on the northern side of the Banihal pass within a syncline of Triassic rocks. They chiefly comprise of limestones and shales lying conformably over the Triassic rocks, very few fossils have been identified in them.

Cretaceous

Rocks of the cretaceous system occur only in a few localities such as Burzil, Deosai and Zaskar ranges. They are composed of white limestones mostly unfossiliferous.

Tertiary

With the closing of Cretaceous times, the region has undergone some physiographic changes. It was during Tertiary times that the great Himalayan Ranges were uplifted into their present positions and the evolution of most of the present day mammalian animals (especially man) had also started. The Tertiary group include four systems—the Eocene System, the Oligocene System, the Miocene System and the Pliocene System. A brief description of each system is given below :

Eocene System

The Eocene system is the oldest of the Tertiary Group and is chiefly marine in origin. The Eocene rocks are developed in Pir-Panjal and Jammu hills and are represented by shales

limestones. In Jammu they occur as inliers around the Sirban limestones and are of great economic importance because they enclose seams of coal and bauxite. The sequence is known as 'Subathu Series'. The Subathu Series of Jammu rests unconformably over the Permo-Carboniferous rocks and is overlain in a similar manner by the Murree rocks.

Oligocene System

No well development of Oligocene rocks has yet been observed in the State. This fact indicates that during the Oligocene period denudation rather than deposition was the chief process operating in the state.

Lower Miocene

Since the rocks of Oligocene are not developed, the Eocene rocks are unconformably overlain by the rocks of lower Miocene known as the 'Murree Series'. The lower beds of the Murree system Series are composed of conglomerate succeeded by a sequence of coloured sandstones and clays. The fossils discovered from the major portion on the series include remains of palm and some dicotyledon trees and fishes.

The Murree series is succeeded by younger rocks, forming a composite group ranging in age from Middle Miocene to lower Pleistocene and known by the name of 'Siwalik System.'

Middle Miocene to Lower Pleistocene

Overlying the Murree series is the Siwaliks composed of sandstones, which are interbedded with shales and clay. The junction between the Murrees and Siwaliks is a major fault known as the 'Main Boundary Fault'. The Siwalik System has yielded a good collection of vertebrate fossils. On the basis of this fossil wealth the system has been divided into three series viz—the Lower Siwaliks, the Middle Siwaliks and the Upper Siwaliks. These series are not clearly marked, there is a gradual transition from one series to another. These series are further subdivided into stages each characterised by some typical fossils. The general classification is given below :

<i>Division</i>	<i>Stages</i>
Upper Siwaliks (8000 feet)	Boulder Conglomerates Pinjor stage Tatrot stage
Middle Siwaliks (8000 feet)	Dhok Pathan stage Nagri stage
Lower Siwaliks (4000-5000 feet)	Chinji stage Kamlial stage

The upper most member of the Siwaliks, the boulder-conglomerate, lies unconformably over the Pinjor-stage.

Middle Pleistocene to Recent

The boulder-conglomerate is overlain by about a 100 ft. thick deposits consisting of boulders, pebbles, gravels etc. known as the pebble-beds of Jammu. Reddish and buff coloured clays are also found in it. Equivalent of these pebble beds of Jammu are the flat topped mounds called 'Karewas' in the Valley. Nearly half of the Valley floor is covered by these Karewas. They are found along both sides of river Jhelum and the most prominent of them being the Karewas of Pampore, Badgam, Awantipur, Bijbehara Pattan and Safapur. These are composed of silts of different colour and sands with embedded moraines. They are generally horizontal, but show dips varying between 5° - 25° where they rest against the slopes of Pir Panjal. They have been divided into a lower and an upper group, there being a marked erosional gap between the two. They are thought to be of Pliocene age and have in their record a clear evidence of Pleistocene glaciation of Pir-Panjal Himalayas. Some Karewas, particularly those in Handwara contain thick seams of lignite, or peat.

The recent deposits in the State are the *Bhangar* and *Khadar* the alluvia in laid down by the streams and the spring deposits in the Kashmir Valley.

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2

Indus-Shyok Furrows— A Regional Account

ENAYAT AHMAD*

THE Indus emerging 'from the lap of the earth' north of Kailas Range at an altitude of 5,165 metres as 'an unpretentious brook'¹ is, like the Tsangpo, the upper Salween and the Mekong, in its upper course from its source up to near the Gilgit confluence, one of the straightest rivers of the world. It does not cross any of the Himalayan or Trans-Himalayan ranges during this upper course (about 900 km. long) suggesting that there must be particularly physical conditions restricting this 'furrow' or gorge-like narrow valley in a straight defile. From near Hangle up to about Kargil (400 km.) the Indus flows mostly along a narrow belt of thrusts and faults parallel to the stream, partly covering the furrow and partly being south of it. Geologically this belt consists of Cretaceous-Oligo-Miocene sedimentaries (Conglomerates and Limestones) with extensive generally central patches of ultra-basic igneous intrusive rocks called 'Indus Ophiolites'². The coincidence of the Indus with this geographically weak belt of thrusts and faults probably continues south-eastward beyond Gartok in Tibet for another

*Dr. Enayat Ahmad is a Professor of Geography, in the Ranchi University, Ranchi.

c. 225 km. along the upper course of the Indus and its tributary the Gartang Tangpo.

The Shyok and its tributaries the Shigar and the Siachen have thrusts and faults³ close to and along their furrows, showing that these too, like the Indus are structurally-guided valleys. This fact explains their straightness and narrowness. Near the syntaxial bend south-west of Harmosh the faults and strike-lines change and align themselves NE-SW parallel to this part of the Indus furrow which mostly runs through a zone of 'Indus Ophiolites'—the igneous intrusives and further west beyond Chilas through granites, gneisses and schists.

The Indus is believed to occupy a part of a much longer structural depression in which occur the Mansarover lake, the upper Sutlej and the Gartang Tsangpo and further north-west the Indus. The eastern part of the depression was occupied by the Tsangpo and the entire drainage was dominated by a single stream going westward into Central Asia like the Indo-Brahm or the Siwalik river (of Pascoe and Pilgrim) which also flowed south of the Himalayan wall during the Siwalik period (Pliocene-Pleistocene) from near north-east Assam towards north-west⁴. The separation of the Indus-Tsangpo drainage is believed to have occurred after the elevation of the Kailas Range in very recent geological past⁵.

The Shyok Valley :

Two major tributaries of the Shyok—the Galwan and the Chang-Chenmo occur in the trans-Shyok area. The remaining components of the Shyok valley are :

(i) The eastern N-S upper course of the Shyok which extends from near Karakorum pass to Shyok village, (ii) here the Shyok is joined by a relatively short tributary, the Lung-Chu from SE, (iii) hence the Shyok proceeds north-west wards parallel to the Indus till it is joined after a length of c.130 km. near Hundar village by a major tributary the Nubra (the Siachen) from NNW from Siachen glacier of the Karakorum Range, (iv) the Shyok flows from here north-westward till it joins the Indus near Kiri village, about 30 km. south-east of Skardu, as the crow flies. All these components of the Shyok mostly flow through what has

been called as 'Batoro granite' or 'Central granite'⁶. The Nubra or Siachen, however, occupies a narrow Carboniferous-Permian Limestone belt and the south-eastern tributary from the Pangong Range flows along a narrow Cretaceous limestone belt.

Rising in the glaciers south-east of Karakorum pass the Shyok has a total length of 640 km. and a total fall of 3,200 metres, *i.e.* average fall of 5 metres per km. while the mountain course of the Indus is marked by a broader channel in the upper section and a narrow gorge in the lower. In the case of the Shyok, the character is reversed (or is in common with most streams), *i.e.* it has a narrow glen in the upper course and a relatively broad often with braided, fordable channels, in the middle section. An interesting feature of the Shyok gorge is its periodic damming, roughly once in 50 years, by ice advancing from the Komdan group of glaciers. The temporary lake about 15 km. long named Capshan after the caravansari of this name, was formed in 1832-33, 1876-77 and 1923-24. The dam formed in 1923-24 burst during 1926-32 in three stages. This periodic phenomenon appears to be the function of the progressive accumulation of ice and the local slope.

Near the northern end of the Shyok valley is the famous Karakorum Pass (5,575 metres). Seven Hedin describes this difficult route thus 'If any road in the world deserves the name *'Via dolorosa'*, it is the caravan road over the Karakorum Pass connecting Eastern Turkestan with India.' Like an enormous bridge of sighs it spans with airy arches the highest mountain-land of Asia and of the world''⁸. The ascent and descent at the pass itself is abrupt and steep but further away the slope is gentle. A saddle-shaped water-shed across the Shyok divides its two affluents, Great altitude marked by rarified air produces giddiness which may make riders faint and fall off from the ponies. The animals also die (the pass being marked by skeletons of horses) of exhaustion and hunger (the area being devoid of any vegetation). The pass is a rounded ridge connecting two hills about 300 metres higher, and is stream with shingle chiefly of brittle black slate. The pass remains open till early autumn when snow lies on the higher shoulders.⁹ The pass is about 18 km. north-west of the halting place called Dablat Beg Oldi (translated as 'where Daulat Beg died'¹⁰) indicating that this is the place

where one (not known which and when) Daulat Beg died. Here the valley shrinks to 'a mere corridor between walls of red conglomerate'.¹¹ Recently the Chinese and Pakistanis have illegally constructed an all-weather highway in the region which is Indian territory illegally occupied by Pakistan. In winter strong winds prevail in the region. 'Fine red dust from weathered sandstone flies like clouds of blood through the valley and colours the snowfields red'.¹² Because of its precipitous narrow, dreary, cold and vegetationless character Sven Hedin described the Shoyk Valley as a 'frightful mousetrap'.¹³ In the southern part near Shyok the scenery has been described as "wonderfully fine and gigantic granite crags tower up on all sides". The gorge is surrounded on both sides by "grand mountain gables, silent and solemn, like Egyptian pyramids, like cathedrals and fortress towers (see illustration No. 300 by Sven Hedin, Vol. II, p. 238) Between them detritus cones descend to the valley floor, where their bases are eroded by the high water of the summer flood and cut off in perpendicular walls."¹⁴ This Shyok furrow route is extremely trying and is desolate. The only signs of human settlement are to be found at the caravan halting places, e.g. Daulat Beg Oldi, Gapshan, Saser Brangsa, in order from north; and the camping grounds, e.g. Sultan Chhushku, Kataklik Mundro, Chhumed, Shukpa Kunzang and Chhong Angal.

The Indus Furrow

We have already noted the almost rhumb-line straightness of the Indus furrow from its confluence with the Gartang to near Salsi and the geological nature of this part of the valley. The total fall of the Indus from its source (5,166 metres) to near its confluence with the Gilgit-Bunji (1,412 metres), i.e. in a length of about 1,000 km. is about 3,754 metres, i.e. 3.78 metres km. The river is known as Sinkhatab or 'lion's mouth' near its source. After flowing over the Tibetan tableland (having an elevation of about 5,400 to 4,500 metre) where it has a shallow and relatively broad channel, the Indus enters its well marked gorge or furrow in Hanle district of south-eastern Ladakh. Thence up to Leh the narrow valley is occasionally bordered between spurs by flat-topped alluvial terraces or sloping taluses

often 30 metres thick and the stream occasionally flows through alluvial flats. The width of the stream may vary from 20 to 130 metres. The discharge in September is about 774 cusecs in north-western Hanle, *i.e.* in Rupshu where the valley is about 3-9 km. wide. The mountains on the flanks rise 1,500-1,800 metres above the level of the stream. The Zaskar from the north, fed by the glacier of the Great Himalayan joins the Indus about 24 km. below Leh and is believed to contribute more than half the volume of the Indus and the discharge of the Zaskar at this point is about 2,000 cusecs in winter. The next tributary from the Great Himalayan glaciers (near Amarnath Cave) is the Dras with winter discharge of 500 cusecs. After the Shyok joining near Kiri where the winter discharge of the Shyok is c.2,000 cusecs, the next major tributary from the north is the Shigar issuing from Harmosh glaciers. The winter discharge of the Indus below the Shigar confluence is 4,525 cusecs.¹⁵ There are several points between the confluence with the Hanle and the neighbourhood of Bunji where, despite the Indus valley generally remaining a 'furrow' or gorge-like phenomenon, widens as near Sheshat village, 15 km. south of Leh with one of the largest cultivated tracts in the furrow or near Skardu where a crescent-shaped infertile sandy and gravelly plain some 32 km. long and 1.6 to 8 km. wide occur within the Indus valley. As contrasted to this there are other stretches where the valley is a continuous narrow defile or gorge bounded step by rocky flanks as for about 80 km. down Skardu plain. A long section of this stretch in Harmosh is wild, gloomy and without any settlement.

The alluvial terraces are the main patches of canal-irrigated cultivation as also the cones formed by the tributary streams. "Nearly all along the furrow the river is flanked by broad terraces on which spread out gigantic cones lined up below the enclosing mountains".¹⁶ The size of the villages is proportionate to the extent of these alluvial flats and terraces. Where the valley widens the stream becomes shallow, often a fraction of a metre deep in May and is easily fordable, as at Pitak village near Leh. The villages are mostly sited on the flats in the main valley or where a tributary joins the main valley, providing alluvial cultivated and irrigated land between the spurs. Though the mouths of these tributaries may be a rocky constriction, further up

they contain cultivation and settlements for miles. The villages are frequently at a few hundred metres above the stream. These are among the highest settlements of the world. Occasionally in the narrow reaches the river is crossed by wooden bridge as at Marsalang, Ranak and Khalsi. Where downstream the width is greater, there are rope bridges of birch twigs, *e.g.* Rondu village where the rope bridge is 115 metres long, and at Sasil.

Indus valley routes in Ladakh particularly between the confluences with the Dras and Shyok are paths "along the river, sometimes in a piece of sandy alluvium, sometimes on the face of a cliff, washed at the base of the river, the road being carried on precarious-looking timbered galleries fixed into small projections of the rocks".¹⁷

Villages generally occur at an interval of 3 to 10 km. on either bank of the Indus mostly at the confluences of some tributary stream. Every here and there are along the river-bank small patches of cultivated land with a proportionate number of habitations. "These white houses contrasting with the bare surrounding country make each little village a charming sight".¹⁸ All settlements are fairly elevated, mostly 50-100 metres above the stream. Generally they are fairly compact (*e.g.* Drugrub) but occasionally, where the plain is wide, the houses may be scattered 'in twos or threes' at intervals of a hundred yards or so. The usual building material of the wall in a framework of wood is unbaked brick. Sometimes it may be stone. The roof is always flat and made of earth beaten hard. The dwellings are commonly well-built and frequently two-storied. 'Latticed windows, covered with paper or small plates of mica, are also common'.¹⁹ The lower settlements (*e.g.* Leh, Skardu, Bunji) have forts, ancient or medieval for strategic reasons. East of Shushot village (Long. 77° 35'E) c. 14 km. south-east of Leh the population is predominantly Buddhist, to the west predominantly Muslim. In the Buddhist area *gompas* or fortified Buddhist monasteries are an usual and impressive structure. "Nearly every household provides one male member to be nurtured in some monastery as a Lama. There are some famous monasteries such as Lamayuru in the west of Leh. An essential feature of the cultural landscape

are stone walls. called Manis the thousands of fluttering white and coloured flags on which 'mantras' are printed".²⁰

Leh has a dominance of Buddhist culture. This town of well dressed cultured people has been for centuries an enterpot of trade for large area extending from Kashmir to Tibet and Punjab to Yarkand.

There is considerable climatic range in the Indus valley from its source on the glaciers of the northern side the Kailas Range (5,166 metres) to near Bunji (1,435 metres) where the Indus takes a sharp southward turn. Hard winds, frozen winter, cold nights and cloudy days and warm or even scorching clear days characterise the climate of the upper parts of the Indus valley which is relatively shallow and high. At Leh (3,522 metres) about one-third distance from the eastern end of the furrow in Ladakh, the climate is fairly rigorous but at Skardu (2,347 metres) about one-third the distance of the valley from the western end of Kashmir "the climate is good, neither heat nor cold being excessive"²¹. Near its southern turn, i.e. Bunji (1,412 metres) the valley becomes warm and dry with seldom snow cover in winter. The lofty bare rocky flanks increase summer heat by reflection and their shutting in role.

The following figures²² for Leh and Skardu are representative of the upper and lower parts of the Indus valley in Kashmir :

Rainfall normals in mm.

	J	F	M	A	M	J	J	A	S	O	N	D	
Leh	9.7	7.9	7.1	5.8	5.6	4.6	11.9	15.0	6.9	2.5	1.0	0.8	
	Total 82.8 mm (3.26 in)												
Skardu	22.4	17.5	25.9	24.6	20.1	6.1	6.1	9.9	8.6	10.1	13.6	1.5	9.7
	Total 160 mm (6.30 in.)												

Precipitation is very low and is comparable to the rainfall in the driest part of the Indian desert but its regime deserves some attention. The precipitation regime in Leh representing the eastern part of the Indus valley as well as south-eastern Ladakh is markedly different from that in the western part of the Indus furrow and adjoining areas. Here the rainfall maxima, however, low are not in the pre-Monsoon months but in the monsoon months (July and August) themselves suggesting that this might

be possibly due to the opening provided by the Zaskar gorge (the largest river on the northern slope of the Great Himalayan Range in Kashmir) and the various passes that occur along its head-streams across the Great Himalayan barrier.

Temperature at Leh varies from about -8°C in January to about 17°C in July (comparable to the January temperature along the Tropic of Cancer in India), the annual range²³ being $c.25^{\circ}\text{C}$. The diurnal range at Leh is rather uniform, ranging from 14 in December to 18°C in June, except in July when it is only about 6°C . Altitude reduces the annual mean of pressure to about '16.6 inches' or about two-thirds of the pressure at sea level. The wind is from south-west throughout the year. Mean humidities at this station range from 100 in January and February to 50 in June. Cloudiness is higher than in most Himalayan areas, the annual average being 5.44, the maximum being in February (6.10). These figures of humidity and cloud amount (in tenths of the sky) are violently incompatible with the poor figure of precipitation in this extremely 'arid' region in terms of precipitated moisture. But the fact is that low temperature makes the atmosphere cloudy for the major part of the year and extremely moist in the coldest months of January and February.

Vegetation is scarce except patches of Tibetan furze (*donva*) in the eastern part of the furrow or 'good lucerne grass' in and near Leh and elsewhere supporting flocks of sheep and goats.

Probably because of occasional damming of the stream by landslips and formation of temporary lakes the soils are frequently fine lacustrine clay, e.g. in and near Skardu. Poplars, willows and dwarf cedars may occasionally be seen. Cultivation improves in the western lower and warmer portion. Mulberry, apricots, wheat, barley, buckwheat and millets may be grown. Further east as near Leh there is only a single summer crop of wheat, barley, peas and beans and some vegetables. The number of fruit trees (here apples and apricots) decreases eastward.

Recent developments in the Leh region are encouraging. The desolate heights and Buddhist cultural landscapes have started attracting foreign tourists. The Buddhist monasteries or Gompas,

e.g. Hemis Gompa (c.1000 years old) with priceless antiquities are centres of attraction. The present population of Leh is c.5,000 persons. The inhabitants of the towns are advised to accommodate paying guests. Incentives have been given to build small hotels and the 'The India Tourism Development Corporation' intends to build a hotel in Leh. The State Financial Corporation has given loans for building hotels at Leh as well as Kargil. The State Government have started running 3 daily bus services from Srinagar to Leh (416 km.). Dras on this route, is one of the oldest settlements. "Once the tourist enters Ladakh after crossing Zojila Pass (11,582 feet) the flora and fauna and the landscape are so different that he has the feeling of being in a different world. After Kargil is uncontaminated Buddhist culture, the like of which cannot be found anywhere else".²⁴

Interesting latest details about Ladakh appeared in the *Statesman* of August 8th, 1977. The wind of change in this remote largest district (95,000 sq. metres) of India started blowing in 1962 after the Chinese aggression so that the area appeared to have jumped from "mule paths and bridge paths to jets and helipads".²⁵

The region is marked by wild natural beauty. Human imprint is seen in villages of mud-built low houses clinging to steep hill-sides along with the tiny spots of cultivated greenery in valleys looking like "pure jade thrown on the brown wilderness" of the general Ladakh landscape.

Tourists started coming to Leh, for the first time in 1974 and their annual number is about 5,000 (7,000 in 1977). Important signs of tourism are three newly built hotels—two in Leh and one in Kargil. It is also reported that hotels will be built all along Srinagar-Leh road. The "pavement traders, who once dealt in Yarkand carpets and yak butter, now peddle fabricated antiques to the tourists. . . . Leh and Kargil (with urban population of 8,000) have electricity from diesel-operated generators, as do a handful of the 2,214 villages (of Ladakh).²⁷

Ladakh region marked by a topography ranging from 3,000 to 6,000 metres in altitude presents climatic hazards especially those associated with rarified air. In winter the temperature may go down to 20–40 degrees below zero centigrade while in

summer the day temperature may shoot up to 43°C. In this arid tract agriculture is not possible without irrigation. This is the reason why only 6% (16,000 hectares) of Ladakh is under cultivation. This agriculturally deficit region imports c.4,004 tonnes of food grains every year. Aridity restricts the growth of fodder also which may be imported to be sold here for Rs. 125 per quintal.

Because of rigorous and discouraging physical conditions trained and technical hands, despite offer of posts, avoid going to Ladakh. This has retarded development. But the army is doing wonderful job in the form of medical patrols to villages and particularly through Field Research Laboratory (at Leh). Although it has mainly to cater to the needs of the army its researches have greatly influenced the local agriculture particularly vegetables. In addition to wheat and naked barley (*gram*), the researches have helped in the evolution of crops which can grow in more rigorous conditions. Thus the growing season (formerly from May to September) has been extended by about one and a half month. Ladakh now is growing about thirty²⁸ varieties of vegetables. The output has shot up from 80 to 1,000 tons per annum in recent years so that the production is in excess of the needs of the army and is available for sale in the local markets. Giant-size vegetables—individual cabbage heads of 14 kilograms, radish of 17 kilograms, potato of 1.5 kilograms and a turnip 5 kg. in weight—produced by the army indicate the potentialities of Ladakh.

Cultivation of vegetables during winter when the area may be snow-covered, appears feasible in the areas of hot springs. e.g. the Puga valley, Sokar and Chumathang where glass houses equipped with piped water having a 20°C temperature at a time when the temperature outside the glass houses was —35°C, have also produced giant-sized vegetables. Although the investment on energy production for glass house agriculture may be high the net return may be economically justifiable as the output of food products will aid the exploitation of such minerals as borax and sulphur.

Another contribution of FRL (Field Research Laboratory) has been the planting of 30 lakh trees in Ladakh. This is a good indication for future afforestation in this erstwhile treeless barren

waste. FRL is also doing good experimental work in poultry, breeding of high quality *pashmina* and merino goats and development of fodder grasses.

To produce gainful engagement during long idle winter months for the indigenous weaving skill (for rugs, tents and woollens from the hair of local animals including yake), a few handicraft centres have been recently (within the last 2 years) opened. They are producing shawls, carpets and wood carving, e.g. woollen handlooms, and handicrafts have been identified as prominent prospective articles of export from the region. And out of Rs. 4.5 crores as current plan outlay about 62% (2.8 crores) and rightly so, have been earmarked for "transport communication, irrigation and power".²⁹

But along with the opening of Ladakh to tourists since 1975 a new danger has cropped up. It is the theft of the rare antiques and articles of art.

"A tourist in Leh, for instance, can travel freely within a radius of 50 km."³⁰ Hemis Gompa, the oldest and the largest castle monastery is 44 km. from Leh across (north) the Indus along a good road. It houses about 200 lamas. The other notable castle monasteries around Leh include Alehi, Shankar. Stock and Spituk.

The smallest wayside gompa is a treasure house of wood carvings, silk scrolls and paintings, stupas, decorated precious stones, musical instruments, books, costumes, masks and various articles of Buddhist worship.³¹

None cares for the notice board 'at the lower end of the Leh bazar' that to buy antiques is illegal.

There is a gathering after every 12 years at Hemis Gompa. The last gathering took place in 1980. Sited at an elevation of c.4,000 metres Hemis gompa is surrounded with trees. It is overlooked by craggy hills c.5,000—5,500 metres high where the Lamas spend three months in solitude during summer.

"Last summer, there were about 7,000 tourists in Leh alone. There are less than 300 hotel beds and even these are not in clean surroundings".³²

"Attracted by the tourist boom, many house owners have begun turning a portion of their houses into hotel and renting

out rooms, particularly to foreigners. The ground floors, usually reserved for keeping livestock, are being used by humans".³³

An interesting feature of this region is the icehockey which is played in the stone-walled 'highest rink in the world' (c. 11,000 feet high). This water reservoir is frozen in winter and early spring. The Ladakhis are so much acclimatised that they don't feel the lack of oxygen at such height.³⁴

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Origin and Introduction of Flora in Kashmir

G. N. JAVEID*

THE Valley of Kashmir, securely placed in the *bosom* of the Himalayas at an average height of 2,500 m, is an 'oval plain girt with a chain of mountains'. The latter with snow-capped summits and pine-mantled slopes shelter a number of glades and meadows. In its high elevation, dry climate and curious flora, in which east blends with the west, render any comparison with other countries of the world impossible. It is a distinct area from the point of view of its flora which is quite different from the adjacent sub-tropic lands of Jammu and the Punjab.

Kashmir extends from 32 17° to 36 53° N. Latitudes and from 73 26° to 80 30° E. longitudes. The state with an area of 80,900 sq. miles is mostly mountainous. From north to south it extends over 400 miles (640 km.), and from east to west 300 miles (480 km). The state is bounded on the north by Chinese

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and Russian Turkistan, on the east by Chinese Tibet, on the South by the Punjab and on the West by the North-Western Frontier Provinces of Pakistan. (USSR). China, Afghanistan and Pakistan constitute the boundary of the State.

Kashmir falls in the lesser Himalayan zone of the Great Himalayas. The Central Himalayan axis bifurcates near Kulu, and a branch of it extends towards the north-east of the valley, known as the Zaskar Ranges; and the other, Pir-Panjal Ranges, extend to south and southwest, from Muzafarabad on the Jhelum to Kishtwar on the Chenab and further east to meet the Zaskar Ranges.

These ranges are predominantly constitute a region in which the sediments laid down in a vast geosyncline continuously from the Cambrian to the early Tertiary, have been rigged up and folded. They, thus, show enormous thickness of sedimentary rocks representing practically the whole geological column, which have been compressed, over thrust and elevated into dry land only since the end of Mesozoic times.

The valley proper is held to have been a huge lake, without an opening, covering whole of the Siwalik area and Kashmir proper. After the first glaciation the Pir-Panjal system was uplifted and it caused a thrust, resulting into a gorge on the Western side of the valley near Baramulla on a weak spot of the mountain, and whole of the lake was drained off. This is explained by the presence of slopes and ledges or *Karewas*, which render the configuration of Kashmir striking and unique, and is further strengthened by the fact that the valley represents an alluvial system, both Tertiary and Recent.

The sediments of the big lake were deposited, forming alluvial basin, which later on gave rise to the terraces of the valley. The borders of the recent alluvial formation are the *Karewas*, formed of the alluvial or lacustrine material. They are upper *Karewas*, at the height of 2000 m and lower *Karewas* at the height of 1,600 m. The upper *Karewas* have been located on the south eastern sides of the valley.

The lakes of the valley, are said to be the remnants of the great lake.

Climate

The valley, which is protected from the influence of the outer regions by the tall mountains, there is little variation in the climate of different regions, and therefore, except on the higher elevations, there is little effect of climate on the distribution of vegetation, which is mainly influenced by the soil factor. The Valley of Kashmir, which forms a transitional region of diverse physical features between the weak monsoon zone of the Punjab and cold dry belt of Tibet, shows little affinity with the climatic types prevalent in these adjoining areas.

The Pir-Panjal Ranges act as a barrier to the southwest monsoon and the northeast and north mountains check the cold blasts of Ladakh. The Valley itself has a temperate-cum-mediterranean climate of the continental type. Severe winter extends for over 70 days, from December 24 to March 8. During these days the temperature goes below zero. The westerly disturbances have a strong influence across the northwest India and Iran.

Origin of Temperate Flora

The extra-tropical flora of the northern and southern hemispheres probably had a common origin, as evidenced by the many affinities at family level, whether by transtropical migration via upland regions of pre-cretaceous fold belts (Du Reitz, 1940) or by migration to temperate low lands of both the hemispheres from their centres of origin in Triassic to Middle Jurassic tropical uplands (e.g. Axelrod, 1970). Whatever the details of their earlier separation, however, the northern and southern temperate floras appear to have been differentiated by Middle Cretaceous times (Berry, 1937; Axelrod, 1952; Takhtajan, 1969).

The Continental Drift from the Paleozoic land masses of Laurasia and Gondwanaland had a great influence on the distribution of the regional floras. With the opening of the Atlantic Ocean in the late Cretaceous, the boreal floras showed the development of regional differences and later with the disappearance of Tethy's sea and the spread of arid Asiatic regions, the migration between East Asia and Europe ceased. This arcto-tertiary

temperate flora then gradually extended south to approach the present boundary of tropical zone (Takhtajān, 1969). Whether or not Gondwanaland played a Central rôle in the origin of angiosperms, it is clear that a temperate Antarcto-Cretaceous flora can be discerned in Antarctica (Cranwell, 1964), which appears to have remained in polar latitudes from permian times to the present (Tarling, 1971). Antarctica having played the central rôle in the north ward-spread of flora has been due to the influence of the regional differentiation of the Cretaceous-early Tertiary fragmentation of Gondwanaland (Cranwell, 1964).

Migration of Flora into Kashmir

Whatever the centres of origin may have been, but it is generally agreed that the migration of angiosperms started during mid-Jurassic and early Cretaceous. Dispersal was further moulded in a second epoch, possibly lasting from the Mid-Cretaceous to early Tertiary, when the ancient continental mass filling the Indian Ocean (Gondwana) crumbled.

Kashmir has land connections on the north and northwest through which it reaches to Afghanistan, U.S.S.R and West China, but lies separated from the Peninsular India by tall mountains. Besides the climate of Kashmir is more of the Mediterranean type and differs from subtropical and tropical climate of the adjoining regions towards south and the dry cold belt of Tibet.

It is now agreed that the land connections of one country with another supported by more or less uniform climatic conditions tend to distribute plants from one to another and *vice versa* by the natural processes of plants distribution. Such a land connection existed between Western Asia and Southern Europe and the Mediterranean flora (in part) invaded Kashmir through Iran-Afghanistan-Kashmir-India (Chatterji, 1939; Javeid, 1970). This assumption is based on the similarity of the flora of the region with Africa. Baeckle (1974) has shown similar relationship of the flora of five mountain parts : Persia, Arctic, C. Asia, Tibet and Kashmir (Fig : 1).

However, the Kashmir-Himalaya is a region in which the sediments have been rigged up and folded, compressed and elevated into dry land only since the end of the Mesozoic times. In fact the formation of the Valley is based on the alluvial

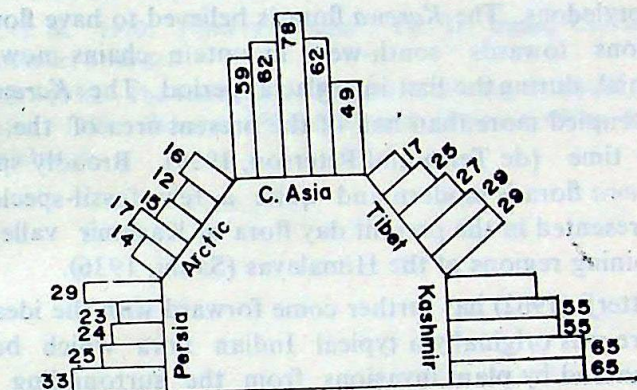


Fig. 1

Fig. 1. The relationship of the flora of mountain parts; The figures indicate the per cent of species in common with the following adjacent regions: Persia—Iranian Highlands, Turkey, Eastern Mediterranean Mountains; Arctic—Arctic and boreal element Siberian elements, mostly widely distributed over the Northern Hemisphere; C-Asia—Central Asiatic Mountains, Pamir, Altai, Tianshan, Tibet inner Asiatic mountains & highlands, Tibet Eastern Altai; Kashmir—Western Himalaya, Karakorum.

deposits of the great lake which filled the valley and was drained off in the late Tertiary. It is generally agreed that during its geological history, the Valley has passed through three glacial and four interglacial phases after the formation of the Himalayas, and this interplay has left a mark on the flora of the valley, the origin of which should be read through these periods (Javed, 1970).

Thus Kashmir has fallen in the way of migrating plants in Jurassic and early Tertiary, but due to late formation of the land, the great majority of the plants could not be established. Therefore, there appears to have taken place a secondary migration of these plants from their secondary home, from the adjacent countries, more so from West Asia and to some extent from the Western Himalayas (Javed, 1970).

Another feature of geological formation which has left a clue to the first introduction of plants in the Valley, is the alluvial projections of the mountains, *Karewas*, formed by the sediment of the receding lake. The plant fossils of these *Karewas* which have been identified are predominantly dicotyledons and a few monocotyledons. The *Karewa* flora is believed to have flourished in regions towards south-west mountain chains now called Pir-Panjal, during the first interglacial period. The *Karewa* may have occupied more than half of the present area of the Valley at that time (de Terra and Peterson, 1939). Broadly speaking the *Karewa* flora is modern and quite a few fossil-species are still represented in the present day flora of Kashmir valley and the adjoining regions of the Himalayas (Sahni, 1936).

Chatterji (1962) has further come forward with the idea that that there was originally a typical Indian flora which because partly masked by plant invasions from the surrounding countries. It is difficult to agree with him, particularly as far as Kashmir is concerned, because otherwise it would mean complete negation of geological history of the area and the speciation that has gone in after the uplift of the Himalayas which never existed in the area when at least Kashmir and its surroundings were at the crossroads, at least at the receiving and forwarding end. The continuity of Kashmir with Afghanistan, southern hinges of China is not only a fact of history but a continuum which has existed from the very inception.

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4

A Note on Flora of Kashmir

P. KACHROO*

At one time the whole Valley of Kashmir was covered with a vast lake. The shrinking remnants of the lake are the present lakes of the Dal, Manasbal, Wular, etc. It was flanked on the North by the slopes of the main Himalayas and on the south by what is now Pir-Panjal Range. The latter separated the lake basin from the Indian plains (de Terra, 1936). The *karewas* lie at present in isolated tracts and at depths below 300 m show plant remains of Pleistocene age as well as lower down 'varves', a characteristic feature of glacial regions. Wadia (1932) stated that it was during the final phase of uplift of the Himalayas that the *karewa* beds were dragged up 2,000 m on the Pir-Panjal Range and caused tilting of the late Pleistocene lake terraces round Srinagar, the effect of this upheaval was as far west as the Salt Range. It is now established that as in Europe during the Ice Age the valley experienced several periods of extreme cold alternating with warm periods culminating in the present temperate flora of the Kashmir Valley.

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The fossils of Pir-Panjal Range (de Terra in Wodehouse 1935) are forest trees, shrubs, such as oak, willow, poplar, cedar, box, berberry, rose, *Rhadodendron*, cinnamon, holley, and *Trapa*, *Vallisneria*, *Chara*, etc. The Pir Panjal Range together with the Himalayas was once under the Tethys Sea separating India (which lay south of equator) from the Eurasian landmass in the north. Into this sea India sent out two great promontories: the Kashmir promontory on the northwest and Assam promontory on the northeast (Mitra, 1927). Zaleski stated that Kashmir was connected with Eurasia by an isthmus.

It may be recalled here that the region on the southern side of the Tethys was represented by *Glossopteris* flora and the region north of it by *Gangomopteris* flora. But the former, at the end of glacial period, did not represent "a glacial flora like the modern flora of Arctic regions" (Sahni, 1937). Sahni (1939) believed that *Glossopteris* flora did not originate in a tropical climate. He further stated (1921) that most of the Indian fossil plants belong to the Gondwana system, extending up to Kashmir. It is possible that in this northern maritime province of Gonwanaland, the vegetation was somewhat different from that in the interior of the continent."

The *Glossopteris* flora did not have much in common with *Gigantopteris* flora, though there was an intermingling of the two in the Far East, the former was essentially southern and temperate and the latter northern in warmer climate analogous to that of the European coal measures. The two, however, evolved on separate continents though some means of some intermigration was possible in the later phases. As regards Gondwanaland element in Angaraland, it may have crossed by way of a late Palaeozoic Archipelago which Zaleski had postulated (Sahni, 1918). Geological evidence of such an Archipelago has since been found by Wadia in the Kashmir portion of the Tethys. A consideration of flora of Kashmir thus assumes importance.

Recently Robert (1969-70) has found that quite a few species of eastern Himalayas flourished in Kashmir Valley during the first interglacial phase and their absence now is alleged to be the result of physiographical changes since the deposition of lower *karewas*. Further the composition of the interglacial

forests was much different from that of comparable forests of today in the valley. Thus, during the successive stages in the phytogeographical evolution of Kashmir Valley since early Quaternary as a result of repeated alternation in cooling and warming of climate in Pleistocene together with a cycle of organic movements, the original vegetation in the valley was transformed from a subtropical one of a typical oak-laurel community to the present temperate pine-deodar-silver-fir-cherry-horsechestnut community. In this process of trial through geological times, the oak, laurel-chir communities were eliminated.

Floristics

Floristically the state of Jammu and Kashmir is divided into three regions : alpine desert flora of Ladakh, subtropical flora of Jammu, and predominantly temperate flora of Kashmir. General features of the three are summarised below :

Ladakh

This high altitude desertland with practically no rainfall during growth period is largely dominated by xerophytic vegetation. The natural tree elements being largely lacking except for more humid regions of Nubra Valleys and river valleys in the whole district. *Hippophae* scrub, *Caragana pygma* are the major woody components together with *Acantholimon lycopodioides*, the major source of roofing and fuel wood. The region supports several characteristic species endemic to this area of the world e.g., *Stachys tibetica*, *Euphorbia tibetica*, *Astragalus falconeri*, etc. *Christalea Crassifolia*, The major families of flowering plants in the area include *Compositae*, *Papilionaceae*, *Cruciferae*, *Labiatae*. *Astragalus*, *Artemisia*, *Polygonum* are the major genera of flowering plants.

Kashmir

With predominantly temperate climate and extending from near 1350 m to the upper altitudinal level of the plant life, shows zonations of (a) mixed vegetation of broad leaved deciduous/trees and conifers (b) conifer forest zone and (c) white

birch zone dominated by perennial herbs ; but numerous annual weeds have found access to the lower regions of valleys through European travels. The localised distribution of *Conium maculatum*, *Senecio vulgaris*, *Cymbalaria muralis*, etc. in and around Srinagar owe their recent introduction in the valley. The higher slopes of the valley however support several endemic species including *Pseudostellaria kashmiriana*, *Veronica stewartii*, *Pholmis kashmiriana*, *Lavatera kashmirina*. The major families of flowering plants are *Compositae*, *Framineae* *Labiatae*, *Rosaceae*, *Papilionaceae* *Cruciferae*. The major genera are *Saussurea*, *Potentilla*, *Polygonum*, *Artemisia*, *Lactura* *Ranunculus*, *Senecio*, *Poa* and *Bromus*.

Jammu

The subtropical belt of Jammu province is largely dominated by broad leaved woody elements, both deciduous and evergreen types being well represented. The inner ranges towards Kashmir have deodar and chir pine forest. *Papilionaceae*, *Gramineae*, *Compositae*, *Cypetaceae*, *Serophulariaceae*, *Labiatae*, etc. are the major families in the area. On the dry hillocks are found *Acacia modesta*, *Bauhinid variegata*, *Taunea coromandelica*, etc. The foothills are dominated by *Dodonaea scrub*, *Daibeegia sissoo*, *Adhatoda scrub*, etc. Unlike the temperate Kashmir woody genera are among the major ones in the area. These include *Desmodium*, *Indigofera*, *Cassia*, *Acacia*, etc. The major herbaceous genera in Jammu include *Polygonum*, *Ranunculus* and *Cyperus*.

In Kashmir, the proportion of Dicotyledons, Monocotyledon and Gymnosperms is as follows :

	Genera	Species
Dicotyledons	556	2400
Monocotyledons	178	515
Gymnosperms	7	31

On the basis of extant records 2928 species belonging 741 genera are represented in the valley. Of these 44 families are represented by a single genus in Kashmir and their distribution ~

is interesting. Some of them include Trapaceae (*Trapa*), Datis-caceae (*Datisca*), Linaceae (*Linum*) Pyrolaceae (*Pyrola*), Puniceae (*Punica*), Tudlejaceae (*Budleja*), Parnassiaceae (*Parnassia*), Adoxaceae (*Adoxa*), Selaginaceae (*Lagotis*), Paeoniaceae (*Paeonia*), Phytolacaceae (*Phytolaca*), Butomaceae (*Butomus*), Zannichelliaceae (*ZunnicHELLIA*), Najadaceae (*Najas*).

The families with the largest number of taxa are the following :

Family	Genera	Species
Compositae	94	395
Gramineae	100	250
Papilionaceae	42	163
Cyperaceae	9	148
Cruciferae	52	141
Rosaceae	29	136
Labiatae	33	127
Scrophulariaceae	26	95
Umbelliferae	44	87
Caryophyllaceae	19	83

The genera with largest number of species in Kashmir include *Polygonum* (38), *Veronica* (24), *Galium* (16), *Ranunculus* (32), *Garanium* (19), *Nepeta* (36), *Carex* (62), *Cyperus* (26), *Allium* (16) *Artemisia* (26), *Astragalus* (29) *Impatiens* (16), *Corydalis* (19), *Draba* (20), *Taraxacum* (39), *Pedicularis* (18), *Gentiana* (31), *Lodocera* (15), *Potentilla* (*Primula*, (21), *Salix* (16).

A number of our local taxa have been misunderstood in the past, e.g. *Sambucus wightiana* Wall. ex Wight & Arnott, *Padus carnuta* (Wall, ex Royle) Carr., *Valerianella muricata* (Stev.) W. Baxt., *Ranunculus distans* Royle, *Iris Hookeriana* Foster, *I. nepalensis* Wall., *Rosa Bruronii* Wall. *Rubus ulmi-folius* Schott, etc.

Sonamarg Area

Beautiful alpine meadows dominate, broken up here and there by forest patches. At lower altitudes the forests are coniferous mixed with deciduous elements like *Acer caesium* Wall.,

Padus cornuta (Wall.) Carr. with few isolated *Betula utilis* D. Don ; but at higher altitudes are almost pure stands of birch. The birches at such altitudes are distinctly stunted and conform very much to shrubby habit. The forest under growth is quite sparse with few isolated bushes of *Viburnum nervosum* D. Don. *Rosa webbiana* Wall., and tall herbaceous *Sambucus wightiana*, which forms stands in and around the Sonamarg valley. The forest floor, mostly laid with forest litter is dotted with *Fragaria vesca* L., *Viola sylvatica* Fries, *Podophyllum hexandrum* Royle, *Valeriana pyrolaefolia* Decne, *Ranunculus hirtellus* Royle, etc. The scrub lands at lower elevations are dominated by deciduous shrubs *Viburnum nervosum* D. Don, occurring along with *Sambucus wightiana*. This association is dominant mostly on borders of forests. At higher altitudes *Juniperus recurva* Ham., forms large patches on slopes ; mostly tall alpine herbaceous species like *Apuilegia nivalis* occur with these.

The alpine meadows with gradual slopes are extensive and subjected to grazing : thus support low growing species like *Acomastylis elate* (Royle) Bolle, *Anemone obtusiloba* D. Don, *Sibbaldia cuneata* etc. dotted with occasional *Fritillaria royle* Hook, patches of *Iris hookeriana* Foster. Steeper, slopes are mostly stony with loose soil patches. Species like *Phlomis bracteosa* Royle, *Primula nivalis* Pall, grow to some height where grazing is not extensive. The stony bed stream situations are generally localised in mountainous grooves and are under snow for maximum period of the year. Only few short lived plants manage to grow through crevices, such as *Oxyria digyna* Hill, *Ranunculus hyperboreus* Rottlb., *Saxifraga Sibirica* etc.

Lidder Valley

The Lidder valley forms the northwest of the Kashmir valley. It has a pleasant and mild look and calm and peaceful atmosphere, radiated from sober forest covered slopes and woodlands which border the valley. The main stream the Lidder, receives a number of tributaries rising from Shieshnag and carving a deep gorge round the Pisu Hill, flows past Chandanwari on to Pahalgam.

Pahalgam is situated at an altitude of 2,667 m at the junction of the east and west Lidder streams, being surrounded by mountains crowned by high meadows. The Lidder irrigates the adjoining regions. The region is much disturbed by human habitation and cultivation, yet the areas abound in many interesting plants. Margins of streams are covered with *Sambucus wightiana* and *Viburnum nervosum*. The banks are with gravel and sand with stones, but due to fast moving streams they remain wet, plants like the following grow conspicuously: *Chenopodium blitum*, *Ranunculus laetus*, *Prunella vulgaris*, *Trifolium pratense*, *T. repense*, *Rumex nepalensis*, *Mentha longifolia*, *Delphinium incanum*, *Erysimum altaicum*, *Aahillea millefolium*, *Verbascum thapsus*, *Hypericum perforatum*, *Impatiens brachycentra*, *I. Culcata*, *Cichorium intybus*, *Solidago virga-aurea* and species of *Plantago*, *Cynoglossum*, *Polyghornum*, *Filobium*, *Euphorbia*. Climbing and twining plants are represented by *Codonopsis ovata*, *Convolvulus arvensis* and *Polygonum dumetorum*.

The surrounding mountains abode several glades and meadows which present a wealth of flora. Baisaran, ca 5 km from Pahalgam, is a glade of pines with fragrant breeze from all sides. There is also a spring. From Pahalgam to Baisaran the path is very steep. Under the shade of conifers the herbaceous vegetation is chiefly *Mentha longifolia*, *Prunella vulgaris*, *Podophyllum hexandrum*, *Cucubalus baccifer* and species of *Aquilegia*, *Impatiens*, *Trillium*, and *Plantago*. Several orchids are found in the region and *Orobanche epithymum* on several habitats is met with. Near water courses *Caltha polustris* var. *alba* and several species of *Galium* are found. The common species are *Phitolacca acinosa*, *Viburnum nervosum* etc.

Lidderwat, ca 3,000 m alt., towards north of Pahalgam flanks over the Lidder; stream banks are fringed with *Rumex nepalensis*, *Angelica glauca* and *Sambucus wightiana*. The meadows of the mountains (alt. 3,334 to 4,334 m) abound in *Morina longifolia*, *Cricus falconeri*, *Carduus nutans*, *Corydalis govaniana* and species of *Arisaema*.

Aru, 12 km off Pahalgam abounds along pony tracks in *impatiens brachycentra*, *Stachys* sp. (in abundance), number of

ferns in rocks ; and *Viburnum nervosum*, *Mentha arvensis*, species of *Aquilegia* and *Geranium*, more so under pine grooves.

The dominant arboreal vegetation of this region includes *Picea smiteiana*, *Pinus wallichiana*, *Abies pindrow* and several broadleaved species and evergreen species. *Pinus wallichiana* extending from 2,000-3,334 m ; among the broadleaved trees chief representatives are *Juglans regia*, *Acer cesculus indica*, *Parrotiopsis jacquemontiana*, *Salix* sp., *Populus* and cultivated fruit trees. At Chandanwari some of the alpine flowers are *Myosotis*, *Cynoglossum* and *Aster*.

At Kolahoi valley (alt. 4,164 m), surrounded by precipitous mountains are covered by *Betula bhojpatra*, *Juniperus recuva* though prominent conifers are absent. On the islets formed within streams the ground is covered with *Corydalis govaniana* and species of *Pedicularis* ; the margins of streams with *Angelica glauca*, *Impatins brachycentra*, *Chenopodium blitum*, *Mentha longifolium*, *Caltha palustris*, *Primula macrophylla*. The valley abounds in *Senecio chrysanthemoides*, *Rumex nepalensis*, *Euphobia prolifera*, *Sedum quudrifidum*, *Androsace sarmentosa*, *Saxifraga flraga flagellaris*, *Sambucus wightiana* and species of *Ranunculus*, *Plantago*, and *Stellaria*.

Gulmarg

A major portion of the range is dominated by dense cover of *Abies pindrow*, though associated with on southern aspect by communities of deciduous shrubs, and on the level slopes by *margs*. The species extends from lower limits of the range and continues up to the tree line below *Betula utilis*. At lower limits *Pinus wallichiana* and *Cedrus deodara* aggregate but these give place to *Picea smithiana* higher up. *Taxus baccata* spp. *wallichiana* is sparsely distributed in the lower silver fir zone. *Viburnum grandiflorum*, *Sambucus wightiana*, *Stipa sibirica* dominate the forest floor ; while at the ground level *Fragaria vesca*, *Geranium wallichianum*. *Poa annua*, *Polygonum amplexicaule*, *Stellaria media* *Chrysopogon echinulatus* are common. Deciduous tree elements principally *Acer caestum*, *Corylus colurna*, *Padus cornuta* and *Salix wallichiana* are scarcely represented in the *Abies* zone.

The southerly aspects extending to ca 2,700 m are usually dominated by deciduous shrubs, principally *Indigofera heterantha*, *Isodon rugosus*, *Berberis lycium*, *Rosa webbiana* and *Parrotiopsis Jacquemontiana*. The herbaceous components are dominated by *Chrysopogon echinulatus*, *Artemisia vestita*, *A. Nilagirica* and *Origanum normale*. Such slopes often are bordered by grooves of *Pinus wallichiana* and *Cedrus decodara*.

The nallas and network of streams have characteristic vegetation along borders and extended beds. *Populus ciliata*, *Ulmus wallichiana* subsp. *Xanthoderma*, *Berberis pachyantha*, *Salix wallichiana* and *Rubus purpeus* are dominant woody species in such situations ; the principal herbaceous species being *Angelica himalaica*, *Corydalis govaniana*, *Cireim falconeri* and *Swertia petiolate*. In the alpine zone such beds are usually snow covered for major part of the year and a few species like *Oxyria digyna*, *Valeriana dioica*, *Caltha palustris*, *Filipendula vestita*, etc. are found. Towards the lower limit of alpine zone such beds are usually covered by *Syringa emodi*, *Betula utilis*, *Lonicera purpurascens*, *Berberis pachyantha* among woody species ; add *Phlomis bracteosa*, *Salvia hians*, *Doronicum roylei*, *Filipendula vestita*, *Aconitum cashmeriana*, etc. among the herbaceous elements.

Though cattle grazing has largely been responsible for shaping the vegetation of several pockets, the massive meadows at Gulmarg proper and Khilanmarg have been formed due to combined effects of grazing and human interference, though Gulmarg meadow is also said to have been a lake in geologic past. The proper valley is covered largely by matted vegetation dominated by *Sibbaldia cuneata*, *Anemone obtusiloba*, *Gentiana carinate*, *Anāphalis cuneijolia*, *Taraxacum officinale* and *Plantago himalaica*. However, *Pedicularis punctata*, *Primula rosea* and *Caltha palustris* often locally common especially in damp situations. The wet lands and less disturbed areas have local aggregation of taller herbaceous species like *Circium falconeri*, *Angelica himalaica*, *Campanula latifolia* and *Sambucus wightiana*. The matted vegetation of Khilanmarg is essentially similar to that of Gulmarg but taller herbaceous species such as *Euphorbia wallichiana* and *Iris hookerina* dominate the meadow. The additional matted species include *Acomastylis elata*,

Bupleurum longicale etc. *Anemone obtusiloba* is common along upper limit to Khilanmarg meadow.

The *Betula utilis* forest forming the upper limit of tree zone occurs usually in form of pure colonies, though *Abies pindrow*, *Valeriana dioic*, *Caltha palustris*, *Filipendula vestita*, etc. are also found within them. Towards the lower limit of alpine zone such beds are usually covered by *Syringa emodi*, *Betula utilis*, *Lonicera purascens*, *Berberis* sp., *Sorbus lanata*, and *Corylus Colurna*. Above birch zone and within it extending above toward upper limits of scrub zone are associations of *Juniperus recurva* and *Rhododendron hypenanthum*. Through their dense protected grooves they allow growth of several taller species like *Rheum webbiana*, *Saussurea lappa*, *Polygonum rumicifolium* and *Heracleum candicans*. The southern and northern aspects of alpine slopes have distinctive vegetation, latter of densely covered moisture loving species such as *Bergenia stracheyi*, *Primula macrophylla*, *Swertia petiolata*, *Sanssarea atkinsoni*, *Bistorta affine*, *Tanacetum longifolium* and *Potentilla argrophylla*; while the former are usually sparsely vegetated with *Origanum vulgare*, *Inula royleana*, *Sibbaldia cuneata* *Jurinea macrophylla*, *Artemisia mircroftiana*, etc.

The more steeper apine slopes are mostly covered with tufts of *Bistorta affine* with associated herbs such as *Tanacetum longifolium*, *Saussurea atkinsoni*, *Potentilla argrophyllar* *Androsace primuloides*, *Jurinea macrocephala*. The areas towards peaks, which remain snow covered nealy throughout the year have short-lived desert herb communitites consisting of delicate herbs like *Saxifraga flagellaris*, *Gentiana venusta*, *G. tenella*, *Draba alpine*, and *Sedum quadrifidum*.

The various types of plant communities at Gulmarg represent the effect of altitudinal, topographic, biotic and edaphic influences and ensure rich floristic wealth to which the area owes its botanical importance. Thus of the 491 species collected so far, 424 are dicotyledons, 61 monocotyledons, and six gymnosperms; distributed over 291 genera and 62 families. Compositae is the largest family, followed respectively by Rosaceae, Ranunculaceae, Gramineae, Caryophyllaceae, Cruciferae, Labiatae an Scrophularinaceae.

Karewas

An appreciable portion of Kashmir valley, which is of late geological origin, is occupied by pleistocene deposits of a lake which once filled the valley. These deposits locally known as 'karewas' support scarce vegetation as a result of extensive grazing and erosion. They occur as raised flat-topped plateaus separated by ravines of which variable depth and consist of horizontal beds, the uppermost of are composed of coarse sandy material. These karewas are suitable only for rainfed crops. A part of these lying in the neighbourhood of Srinagar, and bounded by river Jhelum on one side and mountain ranges underlying Zabarwan and Twin peaks on other side, have since earliest times been under saffron cultivation.

Wild plants of interest in Srinagar

Of morphological interest : *Asparagus filcinus* Buch. Ham. (clabodes), *Hedera nepalensis* C. Koch, (parasitic roots), *Cuscuta europea* L. and *C. reflexa* Roxb. (total plant parasites), *Orobancha alba* (Steph. root parasite), *Clematis grate* Wall. and *C. montana* Buch-Ham. (petiole climbers), *Galium aparine* and *Rubia cordifolia* L. (climbing by hooked hair), *Achyranthus Bidentata* Blume (abnormal secondary growth), *Poa bulbosa* L. (viviparous), *Aeschynomene indica* L. (sensitive to touch).

Harmful to man : *Rhus succedanea* L. (latex from freshly cut twig causes severe blisters on skin), *Urtica dioica* L. (the acid filled trichomes on the plant produce irritating effect when touched) *Euphorbia helioscopia* L., *E. Prolifera* Ham., *E. biliosa* L. (milky latex causes very mild blisters on skin).

Fungal Diseases (common) : Tar spot of *Rhytisma* on *Acer pictum*, *Puccinia* on *Berberis lycium* (with hypertrophy of floral parts), *Rubus niveas*, *Agrophron semicostatum*, *Artemisia vestita*, *Ustilago* (smut) on *Cynodon dactylon*, *Taphrina* on *Prunus persica* *Uromyces* on *Euphorbia helioscopia*, Downy mildew (*Bremia*) on *Lactuca* spp., Powdery mildew on *Morus indica*, *Celtis caucasica* *Craetagus*, *Juglans regia*, etc., *Stignaria* on *Platanus orientalis*, *Melampsora* on *Salix alba*.

Medicinal : *Achilla millefolium* L., *Artemisia nilagilagirica* (Clarke) Ham, *A. vestita* Wall., *Agrimonia eupatoria* L., *Bidens biternate* (Lour). Merr., *Bergenia ligulata* (Wall.) Engl., *Cannabis sativa* L., *Cuscuta reflexa* Roxb., *Daphne oleoides* Schreb., *Delphinium denudatum* Wall., *Foeniculum vulgare* Mill., *Geranium nepalense* Sweet, *Galium* L., *Verum Geum urbanum* L., *Hypericum perforatum* L., *Jasminum humile* L., *Onosma hispidum* Wall., *Origanum vulgare* L., *Nepeta cataria* L., *Plantago major* L., *Prunella vulgaris* L.

Used in in Match Industry : *Populus alba* L., *P. balsamifera* L., *P. nigra* L. var. *italica* (Much) Kochna.

Sports industry : *Salix alba* L., *S. babylonica* L.

Silk industry : *Morus alba* L.

Furniture and timber industry : *Platanus orientalis* L., *Juglans regia* L., *Pinus wallichianum* Roxb.

Fuel, Baskets stick making : *Parrotiopsis jacquemontiana* (Dence) Rehder, *Cotoneaste nummulariaria* Fisch & May, *Indigofera heterantha* Wall.

Fodder Plants : *Ulmus laevigata* Royle, *Parrotiopsis jacquemontiana*, *Morus alba*, *Chrysopogon gryllus*, *Themeda anathera*.

Edible fruit : *Morus alba*, *Fragaria vesca* L., *Rubus nivecs* Thumb. *R. ulmifolius* Schatt. *Prunus domestica* L., *P. perssua* (L.) Stokes, *P. armenica* L., *Vitis vinifera* L., *Viburnum nervosum* D. Don, *Rosa moschata* Hern.

Edible fresh or cooked : *Amaranthus caudatus* L., *Allium atropreum* Waldst & Kit., *Capsella bursapastoris* Medic., *Chenopodim album* L., *Centaurea iberica* Trew., *Dipsacus mitis* Don, *Fagopprum cymosum* Meissn, *Foeniclum vulgure* Mill, *Malva neglecta* Wall., *Ophionlassum vulgatum* Polygonum alpinum All., *Porulaca oleraceae* L., *Plantantago lanceolate* L., *Rorippa nasturtium-aquaticum* (L.) Schinz., *Rumex dentatus* L.

Wild Beauties for your Garden : *Equisetum* Sp. (marshy banks), *Salvinia natans* (lily pond), *Marsiia quadrifolia* (marshy or shallow pond), *Aspelenium septentionale* (rock clefts) *Ceterach officinarum* (golden fern for rockery), *Adiantun venustum* (shady situations, pots), *Aspelinium niger*, *A. trichoma ones* (shady

nooks, pots), *Pteris cretica* (long hedger, walls), *Pteridium aequilinum* (in open). The following in pots, or in beds : *Fritillaria imperialis*, *Asparagus filicinum*, *Rosa webbiana*, *Levatera kashmiriana*, *Geranium pratense*, *G. incanum*, *Bergenia ligulata*, *Lychnis coronata*, *Rosa moschata*, *Sorbaria tomentosa*, *Polygonum alpinum*, *Ferula jocosheena*, *Delphinium denudatum*; *Aquilegia Valgaria*

Changing Vegetation of Kashmir

V. KAUL*

H. DAR

THE valley of Kashmir lies between 33° - $25'$ to 34° - $50'$ N of equator and 74° to 75° - $50'$ E of Greenwich and is roughly 135 km long and 114 km wide enclosing an area of about 15853 square km. The average altitude of the valley is about 1800 m while some peaks exceed the height of 4000 m from m.s.l. Kashmir valley is a tectonic valley—an exaggerated dun-lying in the synclinal trough between the two anticlinal flexures (Pir-Panjal and Zanaskar) in the middle Himalayas. The valley has a peculiar physical personality, distinctively its assymetrical extent. On the southern flanks it rises gently from the floor to the crest of the Pir-Panjals. Northern flanks are too narrow and are marked by abrupt changes in the gradient accompanied with facetal spurs, suggestive of recent faulting. Most of the valley is flanked by folded rocks of the Carboniferous Triassic period rising to altitudes of 3000 m and above. Rocks of the Pre-Cambrian age are exposed around Baramulla, southernmost gate to the valley. Above the Banihal Pass there occur Jurassic rocks. The valley proper is filled with alluvium, fluvio-lacustrine deposits of the Karewa Lake that cover

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nearly half of the area. Recent alluvial deposits of the Jhelum occupy most of the remaining area. The Karewa deposits are silty clays to boulder gravels more or less horizontally stratified except along the northern slopes of the Pir-Panjal where when occurring they dip at an angle of 40° towards the valley.

The Kashmir valley is somewhat peculiar due to the changes that took place during the glaciation period of the Pleistocene, which not only caused the devastation of the then occurring flora, but also registered a pronounced influence on the climate of the valley. The geological history of the valley indicates the uplifting of the present Pir-Panjal range by about 2000 m to shut the valley off against the monsoonic influences (Wadia 1961). The silting up of the Satisar Lake (present valley) and escape of water through the gorge at Khadniyar (Baramulla) finds mention even in the 'Nilmata Puran'. The shrinking remnants of that lake are the present lakes viz., the Dal, the Manasbal and the Wular etc. (Ct. Sahni 1936).

Past Vegetation of the Kashmir

The Pleistocene flora of Kashmir has been described by Puri (1945, 1946, 1947, 1948) and Mittre (1964). This flora comprised about 128 modern species distributed over 69 genera and 34 families of flowering plants. Ecologically the flora comprises of three distinct types.

1. *The Liddermarg Flora*—It is so named after its locality. *Quercus incana* Roxb and *Q. glauca* Thumb. constitute 70% of the total. The other associated species were *Pinus* sp., *Cedrus* sp., *Mallotous Philippensis* Muell., *Ficus cunia* Buch-Ham., *Acer oblongum* Wall., *A. pentapomicum* Setwart, *Litsaea lanuginosa* Nees, *Cinnamomum tamala* Nees, *Machilus odoratissima* Nees, *M. duthie* King, *Phoebe lanceolata* Nees, *Buxus wallichiana* Baillon, *B. papillosa* Schn. *Ulmus* sp. *Skimma laureola* Hook. f., *Toddalia* sp., *Pittosporum eriocarpum* Royle, *Rhammus virgata* Roxb., *R. triquertra* Wall. *Berchemia floribunda* Wall., *Myrsine africana* Linn., *M. semiserrata* Wall, *Syringia emodi* Wall., *Wenlandia exserta* DC., *Pyrus communis* L., *Cotoneaster* sp., *Spiraea* sp., *Betula utilis* D. Don, *Alnus nepalensis* D. Don, *Berberis lycium* Royle, *Cornus capitata* Wall., *Parrotiopsis jacuqemontiana* Decne., *Desmodium podocarpum* DC., *D.*

laxiflorum DC., *Inula cappa* DC., *Acorns* sp., *Scirpus* sp., *Cyperus* sp., etc. (Puri 1960, Mittre 1964).

2. *Laredura Flora*—The flora includes the species discovered at Laredura, Dangarpur, Nagbal and Gogajipathri. There is mingling of both tropical and temperate species, the former being much more strongly represented and dominating the later. The main species are: *Woodfordia fruticosa* Linn., *Mallotus philippensis* Muell. Avg., *Engelhardtia colebrookiana* Lndl, *Aesculus indica* Colebr., *Myrsine* sp., *Olea* sp., *Ulmus wallichiana* Planch., *U. campestris* L., *U. laevigata* Royle, *Salix elegans* Wall. *Quercus semecrapifolia* Smith, *Q. dilatata* Lind., *Q. ilex* L., *Betula utilis* D. Don., *B. alnoides* Buch. Ham., *Alnus nitida* Endl., *Acer villosum* Wall., *A. caesium* Wall., *Berberis lycium* Royle, *Hedera nepalensis* K. Koch., *Desmodium latifolium* DC., *D. tiliacsum* DC., *Indigofera hebeptata* Benth., *Rhus Punjabensis* Stewart, *R. succedenia* Linn., *Odina wodier* Roxb., *Ranunculus* sp., *Clematis* sp., *Irapa natans* Linn., *I. bispinosa* Roxb., *Ceratophyllum* sp., *Myriophyllum* sp. *Pinus* sp., *Cedrus* sp. and *Abies* sp., (Puri 1960, Mittre 1964). The temperate species are *Aesculus*, *Acer caesium* Wall, *Ulmus*, *Alnus*, pine, cedar, spruce and silver firs. The general indication of this flora which is composed of three species of oak and many typically subtropical forms, e.g., *Mallotus*, *Woodfordia*, *Myrsine*, *Angelhardtia*, *Olea* etc. unrepresented in the Kashmir Valley at present tend to confirm that this flora like Liddermarg flora developed under tropical conditions. This view satisfactorily explains the migrations. from the valley of tropical plants, which in responses to the change in valley climate brought about by the rise in the altitude of the Pir-Panjal Range, started to emigrate and inhabit the more congenial rainy parts of the outer Himalayan ranges.

3. *Ningal Nullah Flora*—This flora typically comprises the forms like poplars, willows, cherries, walnuts, maples, elms, alders and an abundance of spruce, silver fir, pine and cedar etc. (Puri *et al.* 1983). The modern representatives of these plants still exist in Kashmir valley and occupy an altitudinal zone between 2100 m and 3000 m on the northern sides of the Pir-Panjal. This flora indicates this part, at least, enjoyed the

temperate climate during the Pleistocene, similar to the one characterizing the region presently.

Tripathi and Chandra (1972) found the leaves of *Acer caesium* Wall., *A. pentapomicum* Stewart, *A. pictum* Thumb., *Acer* sp. (fruit), *Aesculus indica* Colebr., *Alnus* sp., *Berberis* sp. of Puri, *Buxus papillosa* Schn., *Cotoneaster* spp., *Hedera helix* Clarke, *Pittosporum eriocarpum* Royle, *Pyrus pashia* Buch Ham. ex D. Don., *Quercus dilatata* Lindl., *Q. glauca* Thumb., *Q. incana* Roxb., *Quilex* Linn., *Q. Semecarpifolia* Smith and *Rhamnus purpurea* Edgew., etc. from Nichahoma, a lignite locality. On the basis of these findings Tripathi and Chandra (1972) opined the occurrence of probable warm and humid climate once in the valley in which the vegetation, with associated birds and insects etc lived near the shore of the fresh water bay. Such conditions, however, differ widely from the present day climate and vegetation of the valley.

Except the coniferales, the Liddermarg flora mainly comprised of oaks, lauraceous plants, figs, box, alders, maple, *Mallotus*, *Pittosporum* and *Berchemia* etc. is unrepresented in the modern vegetation of the Kashmir valley and the adjoining mountain slopes. The only dicotyledonous species that still survive in the valley are *Parrotiopsis jacquemontii* Decne, *Skimmia laureola* Hook. f. and *Pyrus communis* L., though the altitudinal range of these species also, as is seen presently, has changed considerably with the species not ascending to higher than 2100 m. The fossil Liddermarg flora is characteristic of the present day tropical and subtropical rain forests of the outer Himalayan ranges.

Present Vegetation of Kashmir Valley

Throughout the valley, except for some steep ridges, rocky cliffs and some southerly facing slopes, there exists a mantle of vegetation, a living fabric of plant communities that is diverse and subtle in its response to environment. Its structure and composition varies all over and is expressive of biological productivity of the land. According to the Directorate of Economics and Statistics Planning and Development Department of J&K Government (1981-82), out of the reported area of 15853

square km of the valley, forests are spread over an area of about 10207 sq. km while orchards and annual crops occupy 3440 sq. km, buildings, roads, rivers, canals and other water bodies 590 sq. km., barren mountains and deserts 370 sq. km and permanent pastures and meadows 460 sq. km. About 150 sq. km. is cultivable waste land put to some non-agricultural uses like fuel wood and fodder grass production. Cultivable waste land is about 320 sq. km. Fallow lands and current fallows occupy about 200 sq. km.

About 3500 species belonging to 1500 genera are represented in the valley (Naqshi unpublished). As already mentioned the present vegetation is conspicuous by the absence of oaks, laurels and several other species. Following zones are recognised in the vegetation of the valley.

I. *Alpine zone*—This zone lies between altitudes of 3600 and 4100 m and begins well above the upper limit of conifer forests. The climate is extremely cold and supports a thick vegetation of stunted trees of *Juniperus communis* L. and *J. recurva* Ham. in D. Don besides some dwarf willows, species of *Lonicera* and *Rhododendron anthopogon*, D. Don. The main plant associations occurring in this zone are (i) *Rhododendron companulatum* D. Don—*Syringa emodi* Wall. association (Dar 1984), (ii) *Juniperus recurva* Ham in D. Don—*Rhododendron anthopogon* D. Don association (Dar 1984), (iii) *Juniperus communis* L.—*Cotoneaster nummularia* thicket (Singh and Kachroo 1983) and (iv) *J. communis* L.—*Rhododendron anthopogon* D. Don association (Inayatullah and Ticku 1964). This scruple vegetation gradually merges into vast pastures—the alpine meadows. Some undershrubs like *Gaultheria mummularioides* Royle, *Prunus prostrata* Labill and *Cotoneaster racemiflora* Desf. form isolated thickets along crevices and wet localities. Primulas, Androsaces, *Cynoglossum*, *Corydalis*, *Saxifrage*, *Anemone*, *Trollius*, *Asplenium*, *Veronica serpyllifolia* L. and species of *Gentiana* and *Polygonum* etc form the ground vegetation of the alpine meadows lands.

II. *White birch zone* : This zone is characterized by the presence of *Betula utilis* D. Don forming pure monotypic stands at some places, lies above the conifer zone between the altitudes of 3200 and 3600 m a.m.s.l. The other main plant associations recorded in this zone are (i) *Betula utilis* D. Don.—*Rhododendron*

anthopogon D. Don. association (Sapru *et al.* 1975. Dar 1984), *Betula utilis* D. Don—*R. companulatum* D. Don association (Inayatullah and Ticku 1964). The herbaceous species associated with these associations are *Sieversia elata* Royle, *Anemone obtusiloba* D. Don, *Iris hookeriana* Foster, *Jaeschkea latisejala* Clarke, *Cassiope* sp. *Codonopsis* spp, *Macrotomia benthamii* DC. and *Pleurogyne spathulata* Royle etc. This zone gradually merges with the alpine zone upwards and with ascending altitudes *Betula* shows reduction in size and gets slowly replaced by *Juniperus* and *Rhododendran* Lower down. however, it is seen growing mixed with *Abies*, forming a transitional association with it in gullies between ridges and northerly slopes. Such transitional *Abies pindrow* Royle, —*Betula utilis* D. Don association has also been observed in Dachigam catchment area (Dar 1984).

III. *Upper conifer zone* (2100 m—3200 m) : This zone is dominated by *Abies pindrow* Royle covering rocky slopes and clayey deposits of the older Karewas. Blue pine *Picea smithiana* Wall and *Taxus wallichiana* Zucc. are the other conifers mixed with it, though, they all form pure stands of their own at some places. The chief broad leaved trees and shrubs in this zone are *Padus cornuta* Wall, ex Royle, *Aesculus indica* Colebr, *Acer caesium* Wall, ex Brandis *Juglans*, *Fraxinus hookeri* Wenzig, *Crataegus* sp. *Viburnum nervosum* Hook f., *Rosa macrophylla* Lindl. *Ribes* sp., *Berberis* spp. *Lonicera* spp. and *Parrotiopsis jacquemontiana* Decne etc. Common associations found in this zone are :

- (i) *Abies*—*Acer*—*Aesculus*—*Juglans*—*Sambucus*—*Fern*—*Viburnum*—*Parrotiopsis* association (Inayatullah and Ticku 1964)
- (ii) *Abies* — *Pinus* — *Sambucus* — *Parrotiopsis*—*Viburnum* —*Fern* Association (Inayatullah and Ticku 1964).
- (iii) Pure *Abies* (fir) community (Wali (1964).
- (iv) Fir—Kail Broad leaf/shrub association. Singh
- (v) Silver fir—spruce—kail association. and
- (vi) Silver fir—spruce—broad leaf shrub association. Kachroo (1983)
- (vii) Pure fir—mixed evergreen broad leaf shrub association

- (viii) Pure fir—evergreen broad leaf shrub association
- (ix) *Abies pindrow* Role—*Pinus griffithii* M'celland and Griffith association (Dar 1984, Wali 1965).

This zone sometimes extends upwards above 3200 m (Dar 1984).

IV. *Lower conifer zone* (1500-2100 m) : In this zone conifers especially species like *Pinus griffithii* M'Celland and Growth and *Cedrus deodara* Loud. grow mixed with broad leaved species like *Parrotiopsis jacquemontiana* Decne, *Viburnum nervosum* Hook f., *Berberis*, *Acer*, *Alnus*, *Rhus*, *Morus*, *Prunus*, *Celtis* and *Fraxinus* etc. The conifer species are sometimes seen forming pure patches against the broad leaved species growing in mixed stands along the mountain streams and moist ravines. The reported associations in this zone are :

- (i) pure *Cedrus deodara* Loud association with thick undergrowth of *Parrotiopsis* (Muthoo and Wali 1963) in Lolab Valley and without *Parrotiopsis* undergrowth in Ganderbal Bloauk (Dar et al. 1983).
- (ii) *Pinus griffithii*—*Cedrus neodara* association (Sapru et al., 1975).
- (iii) Deodar — kail—*Parrotiopsis* — *Viburnum* — *Indigofera* association (Inayatullah and Ticku 1965).
- (iv) *Cedrus deodara* Loud—*Pinus griffithii* M'Celland and Griffith association (Wali 1964)
- (v) *Pinus griffithii*—*Parrotiopsis jacquemontiana* association, and
- (vi) *P. griffithii*—*Viburnum cotonifolium* association (Dar 1984).

Besides these associations *Parrotiopsis* also forms pure monotypic associations of its own especially in Dachigam where it occupies about 60% of lower slopes. In ravines and sheltered places common associations are pure *Morus alba* Linn association, *Robinia pseudoaccacia* L. association and *Juglans regia* Linn. *Aesculus*—*Fraxinus*—*Viburnum*—*Parrotiopsis* association. In addition, so many other shrubby scrub associations are encountered in this zone (Dar 1984).

V. *Valley Plains*: Occupied by annual crops, orchards, building, roads, water bodies, rivers, pastures and graveyards etc. sustain arborcent vegetation comprising planted species like *Salix*, *Porulus*, *Ulmus*, *Platanus*, *Ailanthus*, *Morus alba* Linn, *Robinia pseudoacacia* L., *Juglans regia* Linn and *Prunus* spp. etc. The areas around orchards and croplands are dominated by weed species whereas pastures and meadows are dominated by grasses like *Cynodon dactylon* Linn. and *Bothriochlor pertusa* A. Camus.

Vegetation in Relation to Biotic Pressure

The present population explosion constitutes the most serious problem that humanity has had to face during the course of its history. Need of the poor, particularly the food requirements and greed of the rich has inevitably resulted in transformation of forests, grasslands, lakes, oceans and rivers etc. into cultivable lands or deserts—the result of overutilization of natural resources. According to the forest cover maps prepared by National Remote Sensing Agency, Hyderabad, from satellite imagery for the period 1972-75 and 1980-82 a depletion of 35% in the forest cover had occurred in the seven year period. The population is said to have increased by 29.60% from 1971-1981 and if the rate continues like that, it is doubtful if these natural resources can at all survive for next five decades. On the other hand the total livestock of the valley in particular and even for the state as a whole has remained almost constant from 1956-1977 (46.584 lakhs in J & K). The conversion of pastures into cultivable land at an alarming rate has brought about the destruction of the grazing areas and resulted in lots of pressure on the forest flora due to overgrazing of livestock. Overgrazing depletes the forest floors of the herbaceous vegetation and illegal wood cutting leaves only some otherwise useless shrubs like *Rubus* spp., *Rosa* spp., *Lonicera* spp., *Berberis* spp. besides *Parrotiopsis jacquemontiana* Decne etc. which spreading at an alarming rate is no time convert important timber producing forest areas into commercially useless scrub forests. Such scrub forest assoqiations like *Parrotiopsis jacquemontiana* Decne—*Rosa webbiana* Wall. ex Royle association; *Rosa webbiana*—*Indigofera heterantha* Wall

Wall ex Brandis association, *Berberis lycium* Royle—*Rosa webbiana* association and *Isodon plectranthoides* Schrad.—*Berberis lycium*—Royle association besides other are seen in forest openings, recently cut forest areas and especially in Telbal—Dachigam catchment area (Dar 1984). Grasslands dominated by *Themeda anathera* Nees—*Chrysopogon echinulatus* Nees association (Annual production on dry wt. basis varying from 600-700 gm m⁻²) are converted into matted pastures dominated by *Cynodon dactylon* Linn.—*Bothriochloa pertusa* A. Camus. association (Annual production of dry wt. varying from 70-150 gm m⁻²) by the grazing of livestock and coupled with excessive trampling. Intermediate types of grassland dominated usually by *Poa stewartiana* Bor—*Stipa sibirica* Lamk association with sprinkling of other non-edible or poisonous species like *Artemisia vestita* Wall. *Origanum normale* Don, *Euphorbia helioscopia* L. *Marrubium vulgare* L. and *Centaurea iberica* Trev. ex Sareng. etc. Excessive grazing leads to desertification. Gupta (1979) recorded 18-44 plant species in fenced meadow area of Yus-Marg against 14-38 species in grazed sites indicating the excessive grazing as depriving the areas of the delicate species like *Rumex hastatus* D. Don., *Primula denticulata* Sm. *Atropa acuminata* Royle, *Erigeron alpinus* L., *Senecio chrysanthemoides* DC. and *Poa alpina* L. etc. Besides extensive collection of medicinal plant species of Kashmir Himalayas by man has made so many of them rare in some areas although they are mentioned as growing abundantly in earlier accounts of flora of Kashmir.

Seasonal Changes in Vegetation

The climate of the valley is very much subject to local modifications. In alpine zones it is almost arctic while lower down it is temperate but distinctly cooler than other parts of Kashmir valley. On the basis of variation in temperature and precipitation, the year can be divided into four well marked seasons viz., spring (March-May) ; summer (June-August) ; autumn (September-November) and winter (December-February). Winter is very severe and plant life gets awakened only after the end of this season. Growth advances with advancing season through the months of May to June with the peak being touched,

in July to August. During this period most of the constituent species are in flower while some have even completed their fruiting. From September to October, due to long dry spells rusting of grasses and other species occurs while the deciduous plant species start shedding their leaves with only the hardy herbaceous species like *Cynodon dactylon* Linn, *Bothriochloa pertusa*, *A. Camus*, *Trifolium pratense* L., *Carthamus lanatus* L., *Achillea millefolium* L., *Carduus adelbergii* Rech. f., *Rumex nepalensis* Spreng., and *Taraxacum officinale* Weber etc. still remaining green. The herbaceous vegetation retreats underground with the onset of winter with the new germlings of a few annuals or new sprouts of few perennials, the result of the late autumn precipitations, being the only sign of life for the whole of the winter. The phenological changes however are not discussed here and only seasonal changes in structure of vegetation are dealt with in detail.

Very little work has been done in regard to the seasonal dynamics of the vegetation of the valley. The only accounts are those of Koul and Zutshi (1966), Kachroo *et al.*, (1971), Koul and Sapru (1973) pertaining to the valley plains, Gupta (1979) and Koul in regard to the herbaceous vegetation of upper conifer zone ; Dar (1984) and Dar and Kaul (unpublished) in regard to upper and lower conifer zones as the valley plains. Alpine and white birch zones are yet to be worked out in regard to this aspect.

(a) *Upper Conifer Zone*—In meadows of the upper conifer zone the *Cynodon dactylon* Linn.—*Colchicum luteum* Baker—*Trifolium repense* L. association dominates in spring. The other associated species are *Achillea millefolium* L., *Anemone falconeri* Thoms. *Alchemilla vulgaris* Linn., *Carduus adelbergii* Rech. f. *Fragaria vesca* Linn, *Geum elatum* D. Don., *Gagea elegans* Wall. *Gentiana carinata* Griseb., *Plantago himalaica* Pilger, *Ranunculus laetus* Wall. ex H and T., *Thlaspi* sp. and *Thymus serpyllum* L. etc. In summer this association becomes masked by *Pedicularis pectinata* Wall.—*Taraxacum officinale* Weber—*Cynodon dactylon* Linn association at open sites and *Impatiens thomsonii* Hooker. f.—*Urtica dioica* L.—*Rumex hastatus* Don. towards the shaded areas with the other associated species being *Agrostis subaristata* Aitch. et Hemsley *Atropa accuminata* Royle, *Capsella bursa-pastoris* L., *Epilobium parviflorum* Schreb, *Euphrasia officinalis*

L., *Erigeron alpinus* L. *Ceraninm nepalensis* Sweet, *Hypericum perforatum* L., *Nepeta spicata* Bth., *Polygonum nepalensis* Meissn, *Potentilla nepalensis* Hk., *Phlomis bractcosa* Royle ex Bth., *Phleum himalaicum* Mez *Poo alpina* L., *Stelloria aquatica* L., *Stipa sibirica* Lamk, *Sencio* sp. and *Trifolium pratense* L. etc. In autumn *Cynodon dactylon* Linn—*Plantago himalaica* Pilger—*Sibbaldia cuneata* Kunze association covers these meadows. No new species are seen in autumn when the density of the previously existing species is seen to have declined—a result of maturation and senescence. In winter *Cynodon dactylon* Linn—*Trifolium repense* L. association along with a sprinkling of other frost-resistant species like *Carduus adelbergii* Rech f., *Thymus serpyllum* L., *Achillea millafolium* L., *Plantago himalaica* Pilger, *Rumex nepalensis* Spreng and *Veronica baccabonga* L. etc dominates.

Under fir-spruce forests of upper conifer zone the *Verbasum thapsus* L.—*Carduus onopordioides* Fisch ex M.B—*Drabopsis verna* C. koch—*Fragaria vesca* Lindl prevails in spring with the other associates being *Cardamine impatiens* L., *Colechicum luteum* Baker, *Cirsium* sp., *Gentiana carinta* Griseb, *Oxalis acetosella* L., *Plantago himalaica* Pilger, *Podophyllum emodi* Wall., *Rumex nepalcnsis* Spreng, *Sibb aldia* sp., *silene* sp., *Trifolium repense* L., *Cynodon* sp, *Viola sylvatica* Fries and *Nasturtium officinale* R. Br. etc. In summer the association gets replaced by *Cynodon dactylon* Linn. —*Stipa sibirica* Lamk association in areas under intensive grazing and *Verbasum thapsus* L.—*Sorbaria tomentosa* Rehder association in areas subject to comparatively less grazing. The other associates of the former association are *Taraxacum officinale* Weber *Plantage himalica* Pilger, *P. major* L., *Oxalis* spp. and *Lespedeza cuneata* G. Don. etc, while that of the later comprise *Geum urbanum* L., *Impatiens* sp., *Lactuca* sp., *Lapsana communis* L., *Origanum vulgare* L., *Bromus* sp.,-*Carex* sp., *Poa annua* L. and *Thlaspi* sp. etc. In autumn *Cynodon dactylon* Linn—*Stipa sibirica* Lamk—*Plantago major* L. association is encountered in grazed forest sites and other forest openings whereas the *Astragalus rhizanthus* Royle ex Bth—*Sambucus wightiana* Wall. association predominates the less grazed sites. No winter studies in the zone have so far been conducted due to a prolonged snow cover.

(b) *Lower Conifer Zone* : Depending upon the canopy of the forest, forest floors may either be devoid of any herbaceous flora or sustaining a rich vegetal cover. Generally the thick forests with closed canopy are observed as being devoid of herbaceous ground vegetation. However in Dachigam-Telbal catchment area where lots of studies have been made, both the types of forest ground floors are met with. Thus under pine forests with semiclosed canopies *Fragaria vesca* Lindl.—*Arabis amplexicaulis* Edgew.—*Colchicum luteum* Baker dominates in spring with its associates comprising of *Arabis auriculata* Lam *Arenaria* sp., *Gages kashmerensis* Turril, *Ophioglossum vulgatum* Linn and *Viola sylvatica* Fries etc. The association gets replaced by *Dactylis glomerata* L.—*Carex setigera* D. Don.—*Fragaria vesca* Lindl. association with the common associates as *Geum urbanum* L., *Muhlenbergia huegelii* Trin., *Oxalis* sp, *Polygonum* *T amplexcaule* Don, *Ranunculus distans* Royle and *Saussurea albescens* Hook. f. etc in summer. In autumn most of the species die with both the cover as well as the density getting decreased to a great extent. An interesting feature is the absence of *Cynodon dactylon* Linn, most probably, the result of deleterious effects of litter. During winter the few forest resistant species like *Trifolium*, *Plantago*, *Viola sylvatica* Fries and *Carex setigera* D. Don are seen in green condition to some extent.

Deciduous forest stands remain devoid of any ground vegetation during the whole year except for spring species like *Colchicum letum* Baker *Ophioglossum vulgatum* Linn and *Allium* sp etc, are sustained. In young deciduous forest stands, however, the autumn flowering *Solenanthus cercinatus* Ledeb., *Geum urbanum* L. and the spring flowering *Bromus japonicus* Thumb. etc are very common.

(c) *Valley Plains* : In the valley proper, mostly dominated by cultivated crops, orchards of apple, cherry, almonds, buildings, roads, water bodies, pastures, graveyards, fallows and flood plains, mixed plantation of *Salix* spp. and *Poupulus* spp. are a common sight. Pastures are subject to heavy grazing throughout the year and remain dominated by *Cynodon dactylon* Linn —*Bothriochloa pertusa* L. association in localities adjacent to forests and *Cynodon dactylon* Linn—*Plantago lanceolata* Linn association in other parts of the valley, *Cynodon dactylon* Linn—

Plantago lanceolata Linn—*Medicago denticulata* Barnet in lawns not managed properly, *Plantago lanceolata* Linn—*Medicago denticulata* Barnet association in wastelands and current fallows, *Plantago lanceolata* Linn--*Medicago denticulata* Barnet--*Cynodon dactylon* Linn association in fallows and *Cynodon dactylon* Linn—association on road sides. Severe cold during winter checks growth of most annuals and only *Senecio vulgaris* Linn manages to flourish and reproduce throughout the winter months. Of the annuals which germinate in late autumn, a few including *Euphorbia helioscopia* Linn, *Erodium cicutarium* Leman, *Veronica persica* Poir and *Stellaria media* Linn survive throughout the cold winter months in early vegetative condition. The first major impetus to growth is received from early heat of March when earlier germinated plants begin to flower and several new ones germinate and cover the ground. In April-May species like *Medicago minima* Lamk., *Plantago lanceolata* Linn, *Trifolium repense* Linn *Medicago lupulina* Linn., *Poa annua* Linn., *P. bulbosa* Linn., *Bromus japonicus* Thumb. and other *Vulpia myuros* L. form conspicuous part of the vegetation. Harder species like *Lespedeza gerardiana* Grah., *L. juncea* Pers., *Bothriochloa* and *Cynodon dactylon* Linn. etc. begin to flower in summer. During rainless autumn most of the plants are seen dry or fruiting. In October-November when temperature is low and soil moisture level increases, due to forming of dew, many perennials initiate new growth and several annuals germinate most of which being susceptible to winter frost die down with only a few managing to survive in dormant conditions.

In apple orchards completely protected from biotic interference *Cynodon dactylon* Linn—*Medicago denticulata* Barnet—*Agropyron repens* Cosson association dominates in spring and gets replaced by *Cynodon dactylon* Linn—*Agropyron repens* Cosson—*Taraxacum officinale* Weber. association in summer which in turn is replaced by *Cynodon dactylon* Linn—*Medicago denticulata* Barnet *Agropyron repens* Cosson association in autumn. In winter *Agropyron repens* Cosson—*Cynodon dactylon* Linn association dominates the orchards in winter (Dar and Kaul unpublished).

From the accounts given heretofore, it is evident that the Kashmir valley vegetation is rather relatively poor in species

composition in comparison with other west Himalayan areas primarily a result of series of mountain uplifts in the region during glaciation depriving the area of the moonsoon rainfall. However, whatever is left of the former vegetal cover, vis-a-vis all kinds of stresses and strains, in and around the valley has still a great importance in regard to soil conservation besides providing timber, fuel wood and fodder etc.

The conservation of vegetation has to be the top most in our minds and it becomes imperative for us to preserve whatever is left besides the development of the sound strategies for the rehabilitation of the degraded and on way to degradation forest ecosystem(s) lest we and nature sink together.

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Karewas of Kashmir —A Geographical Interpretation

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THE Vale of Kashmir offers splendid opportunities of study to scholars of different disciplines especially for the geologists. Kashmir region represents rocks of almost all ages—ranging from the pre-cambrian to the recent alluvium. Of all the geological periods, pleistocene period, however, seems to be more important because it was during this period that topography of most parts of the valley, attained their present shapes and configurations. There are various fascinating features of the pleistocene period. The most important is the among them formation of *Karewas* in the valley of Kashmir.

Karewas are fresh-water (fluvial and lacustrine) deposits which are found as low flat mounds or elevated plateaus.

About the Karewas, different scholars have given different definitions. Here, an attempt has been made to examine the definitions of Karewas, given by leading geologists. Among the earlier scholars Lydekker and Godwin-Austen are worth to be mentioned in this connection while the later workers include Wadia, Krishnan, Chatterji, Bhat, Farooqi and Desai.

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Lydekker (1878) mentioned them simply as Karewa-deposits and divided them into divisions on the basis of the constituent beds and their characteristics *i.e.* the lower beds being tilted, and the upper beds forming the horizontal or near horizontal sequence.

Godwin-Austen (1880) attempted to redefine the Karewa-deposits on stratigraphical basis. He divided the Karewas into the older and younger groups. The older Karewas were termed as the Islamabad Group and the younger as the Baramulla Group. He also introduced the term 'Hirpur-Series' for the sequence of Karewas occurring on the flanks of Pir-Panjal range. But these terms were vaguely defined. Moreover, according to this classification their stratigraphy is vague and nomenclature unscientific.

Krishnan (1960) referred to the Karewa deposits as Karewa formation. But their great thickness along with the fact that they consist of successive formations *i.e.* the lower Karewa formation and the upper Karewa formation renders the rank of formation to the Karewas somewhat inferior.

Wadia (1961) regarded them as series and included the third and fourth glacial stages of the pleistocene into Karewa stratigraphy.

Chatterji and Bhat (1973) have ascribed as much as 2450 metres of thickness to the folded lower Karewa sediments. According to them the total thickness of Karewa group would be of the order of 2755 metres. Thus they have referred Karewas as a 'group'.

Farooqi and Desai (1974) also regarded the Karewas as a group of rocks and believed the Karewa group consists of two sequences. The lower tilted sequence, designated as the Hirpur-formation and the upper horizontal or near-horizontal sequence, which they called as Nagum formation. Both of these sequences are named after the names of villages in which they conspicuously occur.

An analysis of the above definitions reveal that there is not a unanimity amongst the geologists about the genesis and definitions of Karewas.

The term 'Karewa' seems desirable to used in order to avoid any confusion. It denotes a flat mound, plateau or terrace in

Kashmiri language, and thus refers to a natural geographic feature. Hence its use in naming a lithostratigraphic unit (*i.e.* Karewa group) conforms to the code of stratigraphic nomenclature of India.

Origin of Karewas

Earlier geologists have accepted the lacustrine origin of the Karewas and upheld a strong mythological tradition of the existence of a vast lake, the 'Satisar' occupying the entire floor of the valley in the post-Tertiary period. Oldham, however, rejected this view. But later on de-Terra, Patterson, Wager and others corroborated the view of earlier observers and strongly favoured the lacustrine origin of Karewas. However, the recent work showed that the lower beds are at least partly of fluvial origin.

While dealing with the problem of origin of Karewas two important points must be taken into consideration.

- (i) It appears that the conglomerates exist on the present lines of drainage, as one can see them near Hirpurth (Shopian) on the stream flowing from the Pir-Panjal pass; at Baramulla on the Jhelum, where it flows out of the valley; at the mouth of the Sindh Nala; and at Islamabad on the Lidder River. There are various other minor developments of conglomerates which occur on the smaller Pir-Panjal streams. The presence of these conglomerates on these streams prove that they are stream deposits.
- (ii) The second point is regarding the lower boundary of the valley of Kashmir. At present the Jhelum flows out of the valley through a narrow gorge at Baramulla. This, however does not appear to have been the original exit from the valley. Some distance to the south east of the present gorge there is first a hill of slates and then a long high ridge, known as Baramulla ridge of tilted lower Karewa-deposits which block another gap and form the present boundary of the valley. The bottom of these Karewa beds is not seen but it seems probable that if

they were removed, the rocky bottom would be lower in level than the present gorge of the Jhelum. It is clear therefore that if this ridge is removed the open plain which occurs below this ridge would form a part of the Kashmir Valley proper. Keeping the above discussion in mind, Lydekker believes that the valley of Kashmir is a '*Blocked River Valley*' rather than a '*True Rock Basin*'.

After knowing the above mentioned facts it becomes important to consider the manner in which the Karewas were formed. From the great similarity in the petrological characters of Lower Karewas to the Higher Siwaliks of the outer hills, it is highly probable that the two series have been deposited in a similar manner. In case of Siwaliks it has been proved that these beds are not of lacustrine origin, but have been laid down by rivers, torrents and ravines and they may be conveniently called as '*Wash-deposits*' (Lydekker).

In case of Karewas the presence of thick conglomerate beds near Baramulla and other places has led to the inference that these beds were probably deposited by the River Jhelum itself, which must then have flowed out from the valley in a course which is not much far from its present one. If this belief is taken as correct then no lake could have existed in Kashmir at that time (Lydekker).

With regard to the Upper Karewas, it seems difficult to imagine how a series of fine clayey and sandy deposits, almost horizontal, and extending completely across a wide and open river valley and attaining a height of more than 200 feet above the level of the valley, could have been accumulated without the aid of a dam by which the rivers water was ponded back. The only explanation of the mode of formation of the upper Karewas is that the Kashmir Valley was occupied by a vast lake or a series of lakes at the formation of upper Karewas, Drew estimated that at one time of its existence this old lake must have reached a level of nearly 2000 feet above the present level of the valley. This estimate seems far too high as it includes the sloping Karewas of Pir-Panjal, which are probably not of the lacustrine origin, they were probably horizontal when deposited and far

below their present level. Their level was, however, raised by their uplift.

The nature of the barrier which dammed to old lake cannot be certainly determined until it is finally decided whether the lower Karewas of Baramulla are true lacustrine. or wash-deposits. If they are lacustrine, the old lake must have continued below the Baramulla Ridge. But if they are wash-deposits the ridge might have formed the boundary of the lake.

On the latter hypothesis it may be stated that the tilting of the lower Karewas in Baramulla, which was probably connected with a general rise of the country along the whole length of the Pir-Panjal Range, may have caused the valley of Kashmir, which was previously an open river valley and became then a blocked river Valley by this barrier near Baramulla in the lower end of the Jhelum. The basin thus formed served as a seat of deposition for upper Karewas. The basin may have been subsequently drained out by the river cutting down the present rock gorge at Baramulla.

If it is considered that the Lower Karewas are in part of lacustrine origin, then it becomes necessary to assume that the barrier existed below Baramulla, and most likely place of its occurrence will be at Rampur.

It is highly probable that the former solution may be correct as it accounts satisfactorily for the presence of conglomerates beds of Lower Karewas as well as for the horizontal form of the upper Karewas. It is clear from the above discussion that the Karewas are lacustrine in origin and the point of view advocated by the earlier geologists cannot be accepted in entirety. Moreover, the frequent alteration of beds of shingle with sand and the layers of lignite point to the subareal conditions of formation. Even the presence a true lacustrine deposits does not prove that the whole of the Kashmir basin was over occupied by a lake. More probably this rock basin (lake) was gradually formed by rising of Pir-Panjal range and other mountains that bound the valley and tilting of the lower Karewas near Baramulla which blocked the river waters. In nutshell it may be asserted that Karewas include lacustrine, fluvatile, glacio-fluvial and loessic sediments.

Spatial Distribution of Karewas

Karewas are widely distributed in the valley of Kashmir and occupy about one half of the total valley floor (*Fig. 1*). They run for about eighty kilometres in length from Kulgam in the south-east to Sopore along the eastern side of the valley and vary in width between 13 to 25 kilometres. In the eastern half of the valley, on the right hand side of Jhelum, they are not continuous and stand like tablelands. Karewas are also widely found beyond Sopore (across Jhelum) in the north western end of the valley.

Though the Karewas occur on both sides of Jhelum, Karewas found on its left side are more extensive in extension. The Karewas on the right hand side of the Jhelum are fewer in number and smaller in extension.

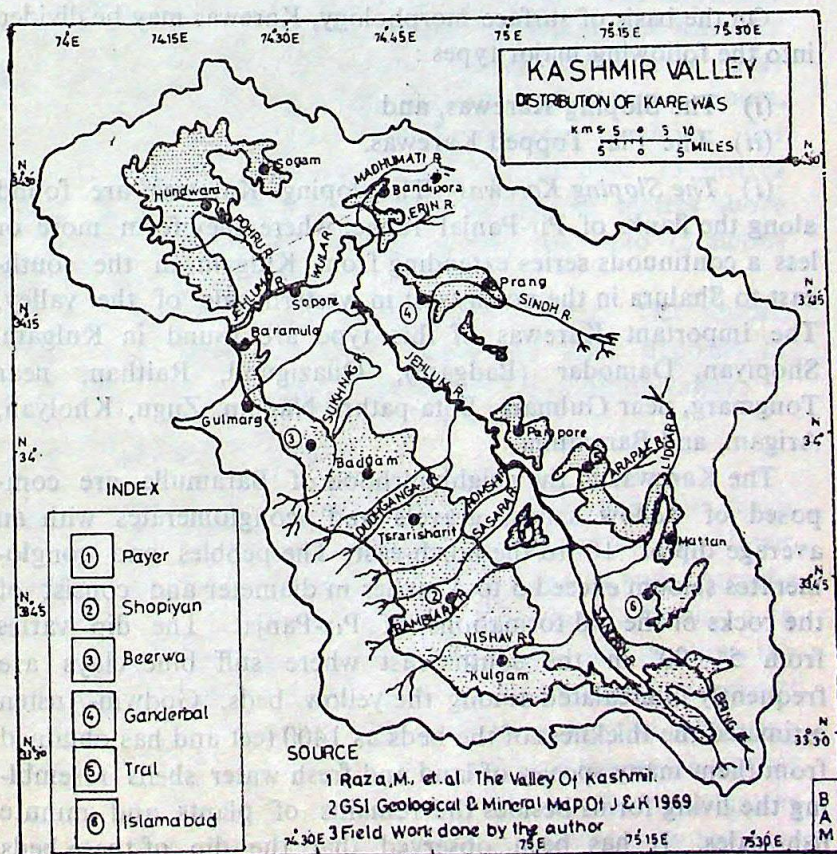


Fig. 1

Karewas, also known as 'Wudars' are more than thirty in number. The important among them are those found in Quazigund, Kulgam, Koyul, Pampore, Islamabad, Mattan, Tral, Bijbehara, Khushipora, Karihama, Kriri, Pattanra, Safapo, Ganderbal, Soura, Handwara and Bandipora.

The present Karewas represent the remnants of huge deposits which were eroded there after by the agents of denudation. The highest limit at which Karewas have been observed on the north eastern slopes of Pir-Panjal is 12,500 ft. or 7,000 ft. above the level of the present Jhelum bed.

Karewas are occasionally surrounded on all sides by the lower grounds but more commonly their one side is at least flanked with the mountains which surround the valley of Kashmir.

Types of Karewas

On the basis of surface morphology, Karewas may be divided into the following major types :

- (i) The Sloping Karewas, and
- (ii) The Flat Topped Karewas.

(i) *The Sloping Karewas*--The sloping Karewas are found along the flanks of Pir-Panjal range, where they form more or less a continuous series extending from Kulgam in the south-east to Shalura in the north west in western side of the valley. The important Karewas of this type are found in Kulgam, Shopiyan, Damodar (Badgam), Quazigund, Raithan, near Tongmarg, near Gulmarg, Bota-pathri, Nagum, Zugu, Kholyan, Arigam, and Baramulla.

The Karewas in the neighbourhood of Baramulla are composed of yellow sands, gravels and conglomerates with an average dip of 10° to the north-east. The pebbles and conglomerates seldom exceed 3 to 4 inches in diameter and consist of the rocks of the old formations of Pir-Panjal. The dip varies from 5° — 20° in the south east where stiff blue clays are frequently intercalated among the yellow beds. Godwin-Austen estimated the thickness of the beds as 1400 feet and has obtained from them many species of land and fresh water shells resembling the living forms besides the remains of plants and minute fish-scales. It has been observed that the dip of these beds

gradually decreases as the distances from the Pir-Panjal increases and the dip becomes hardly perceptible in the central parts of the Valley.

This fact can be visualised as one passes along the road from Gulmarg to Srinagar. Another feature of the sloping Karewas is that, at the same time, the blue clays and conglomerates disappear as one proceeds from the mountains, bordering their western flanks, towards the centre of the valley. The lower beds of the sloping Karewas, are tilted and are either conglomeratic or clayey and are called '*lower Karewas*', while the upper beds are undisturbed and are clayey or sandy and are referred to as the Upper Karewas.

(ii) *Flat Topped Karewas*—The Flat Topped Karewas are few in number and generally consist of more or less of horizontal beds. These karewas occur mostly on the right hand side of the Jhelum *i.e.* ; in the eastern half of the valley. The important flat topped Karewas occur at Pampore, (including the Karewas of Lethapore, Sambura, Chandhara, Zewan and Khrew area) Bijbehara, Awantipora, Islamabad, Mattan, Tral, Safapora, Soura, and Gandarbal. In Pampore and its adjacent localities, flat topped Karewas are widely distributed and rise upto 75 metres above the valley floor ; in Payer they rise upto 96 metres above the general level; while near Islamabad they rise upto 75 metres above the surrounding areas.

Besides, the above mentioned localities where flat topped and sloping Karewas are found there are thick deposits of conglomerates, sand and gravel at the mouth of Sindh valley.

Structural Features of Karewas

Karewas, extending over a vast area, exhibit different structural features at different locations and at different depths. Upper Karewas are mostly horizontally stratified deposits and comprise of the beds of fine grained sand, loam and blue sandy clay with lenticular bands of gravelly conglomerate. At some localities the finer sands and clays show lamination of the nature of "verving" *i.e.*, alternate lamination of different colours and grains, indicating periods of summer melting of ice, in which the water moves quickly and its eroding capacity is more so that the grains deposited are coarser, and winter freezing indicated by the finer

grains as the water moves slowly and the grains are reduced much in size by the process of attrition.

Evidences of oscillation of the glacial climate is recorded in the Karewa deposits. At the end of the Ice Age there was a forest period in Kashmir Valleys. This is represented by a thin but extensive seams of lignite or brown coal which is interstratified with the top beds of Karewas. They are in workable proportions at two or three localities in Handwara tehsil. These localities enclose large reserves of medium grade fuel.

The sloping Karewas show a dip varying between 5° and 20° away from the mountains indicating that they have experienced on upheaval along with the Pir-Panjal Range. There are also some local dips of 40° which show sharp monoclinal folding.

Ravines and canyons, dissecting various Karewas are also conspicuous structural features. These were carved out by the mountain streams and local drainage systems passing over Karewas for ages. These ravines are usually between 50 and 150 feet in depth and generally communicate with the valley floor.

Economic Significance of Karewas

Karewas are mostly devoid of any considerable mineral wealth. They are however of great agrarian importance, commercial and cash crops like saffron, almond, walnuts, apples etc. flourish in the Karewas luxuriously.

The higher reaches of the Karewas are generally under maize cultivation whereas the lower areas are devoted to saffron, mustard and wheat. Where the irrigation is possible, paddy is also cultivated.

Saffron cultivation is an important commercial crop grown on the Karewas. Its cultivation on Karewas and Karewas slopes is favoured due to minimum chances of waterlogging, which is injurious for its cultivation. Moreover, the Karewas are preferably devoted to saffron cultivation because the life span of the corn is 15-16 years on an average in Karewa soil while it is only 5-7 years on low lands which are apt to fall prey to waterlogging.

Horticulture is also gaining importance on Karewa-lands. In fact in some areas the saffron cultivation and horticulture are

grown as inter-culture crops. Among the horticulture crops, almond and apple, occupy larger parts of the arable land.

As mentioned at the outset, Karewas do not possess any mineral wealth. There are, however, some economic entities gain out of Karewas at some places. There is special type of "Kankar" (pebbles) in most of the lower Karewas which forms good hydraulic lime. An excellent chalk similar to tailor's-chalk is obtained from Karewa near Srinagar which is known as 'sipar'. It is used for wall plaster and also for writing on states.

Some small pockets of salt-petra (Potassium-nitrate) are found occasionally in some of the upper Karewas. There are also some reserves of lignite embedded in Karewas which are locally used. The most important of all the economic items of Karewas is clay which is rich in varieties and constituents. These clays are most suitable for potters' purposes. Special localities in the south of the valley are famous for their superior clays. A number of varieties of earthen pots used by common people of the valley are produced from these clays. The earthen pots produced by the potters of Zewan, Tsari-Sharif, Ompara, Pakharpora, Pampore, Tral, Letapora, etc. are famous through out the valley. There are excellent chances of improving the pottery in these areas. But the traditional Kashmiri potters have confined their art to a limited number of articles demanded by the people, especially by peasants. The common articles made from clays are earthen cups, plates, vessels, "Kundals" (Small pots for fire-pots) etc. In addition to the above mentioned uses of Karewas, there are special clays in most of the Karewas which are used by the common people to polish or paint the walls of their homes etc.

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The Vale of Kashmir : Then and Now

C.D. DESHPANDE*

IT was in 1951, that I spent a month or so in the Kashmir valley ; I covered almost the entire valley either by bus or by trekking. Most of it was in a pristine state, but the British had left their impressions on places like Gulmarg, in the Protestant High Schools, and around Srinagar itself. The roads were neat and lined with poplars, the woodlands with the chinara trees, and its famous gardens, a beautiful blend of chinars flowering shrubs and bushes and lush green lawns. The Karewa flats had pastures with saffron cultivation here and there, and the dry embayments of the Jhelum carried neat fields of rice ; and the stagnant pools by its side raised gnarled willows, reeds and creepers, all dark and damp with occasional shot of sun beams to heighten the contrast. Srinagar was both my base and an attraction, not only for lovely walks along the Dal lake, but for its living humanity ; in the Shikaras, along the bazaar ; in the narrow streets of the old town ; in its old houses of wood and steep gables. The bazaar used to be crowded but quiet unlike the noisy bustle we have in the Indian cities ; the Bund had a touch of modernity : in the shops displaying wicker work, papier

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mache articles, carved wood work, carpets and numdahs, and above all in the glaring signboards of the shopkeepers whose names betrayed British influence. Things were unbelievably cheap by present standards. I stayed in hotel managed by an English lady, all found for Rs. 10/- per day, Shikaras for Rs 2/- for the day and good apples Re. 1/- per dozen !

In May 1985, when I was invited by my charming and generous host Prof. S. Manzoor Alam, Vice-chancellor of the Kashmir University, I got down from the Airbus at the airport which did not exist in 1951. I found the road to Srinagar lined with poplars ; along the road ensconced in woodland were new houses well planned and well built. I went through the lanes of the old city ; it was the shortest route ; there was little that changed since my last visit. But the Hazrat-Bal area was all transformed ; no longer the old and worn out swampy areas skirting the Dal Lake ; but a beautiful University Campus with the old barracks well converted to class room use nestling under *chinar* trees. The new cement concrete buildings of the Administrative Offices and the Library do not easily blend in and one wonders when our architects will succeed in moulding such structures to fit into the landscape. There is now a fine road skirting this side of the Dal lake with the campus and the well maintained glistening shrine of the Hazrat-Bal to its left and the mausoleum of Sheikh Abdullah to its right just abutting the lake waters which he loved.

Revisiting the other side of the Dal lake was a pleasure and a disappointment ; the beautiful Shalimar and other gardens have received a face uplift by electric lighting, and the walks are pleasant and do not suffer from modernisation which has taken a heavy toll on the lake side with a succession of high rise structures, of course to cope with tourism, but one wonders why like the Oberoi Hotel they could not be harmonised with the natural landscape ! While the lake waters still appear to be good with Shikaras and house boats plying here and there, the lake side road displays all the features of other Indian cities ; traffic, open stalls and *chana-bhelpuriwallas* and of course the now ubiquitous *Idli-dosa* stalls. One wonders if the real Kashmiri food so excellent and tasty, would get drowned in the *Sambhar* !

In living humanity, the valley has changed a great deal, and much of it for the better. In the class room, it was a pleasure to see the students, male and female, articulate and in good English. Of course, the girls, as elsewhere in India, seemed to have a good edge in academic performance. In the city, too, the youngsters were no longer shy and hiding but looking bright and confident. Education has certainly benefited them. The elders also seemed to be more active than before. The bazaar, however, seems to follow the pattern of other Indian cities : throngs of people, vendors, cycle and auto-rickshaws, taxis and buses choke the road and there is more noise. The unisex culture of 'blouse and jeans' tends to catch the educated young. The old city is quiet, placid and perhaps a little moribund, as before.

Modernisation made a mixed impact. The tele-communication tower on the Shankaracharya Hill is an eyesore, but the roads are better and have not lost their old world charm of twists and turns. They belong to the landscape. Tourism brings throngs of visitors from other parts of India and overseas. You now feel that there are two valleys : 'Tourists Kashmir' of Five Star and other hotels, house-boats, crowded buses and shops. The 'Indigenous Kashmir' of artisans and farmers. One doubts if the dividends of tourist industry have percolated down to the masses or if they are mopped off by the rich hoteliers, travel agencies and traders. The Indian tourists, short in their stay, only 'see' the valley in Srinagar, other towns and 'places of interest' ; few have an eye for enjoying the natural landscape ; and fewer still have the pleasures of trekking through the Liddar, Sindh and other valleys. The foreigner, on the other hand seeks the valley for its cool and bracing everchanging weather ; its temperate landscape and snow-clad mountain slopes, and importantly, it is much cheaper here than in Switzerland or any other European or American highland holiday region. But tourists, Indian and foreign, scarcely bother to know the valley people ; their culture and life style. We can understand real Kashmir only by living with them, even though for a short while ; not through the cultural programmes arranged by tourist agencies and Five Star hoteliers. Cultural fusion is possible if the people of the valley, both in the town and the village, are

trained in the art of receiving guests. 'The paying guest' is now a well accepted form of social living in Western societies, particularly in areas which attract tourists. It will not only ease the crowding in the hotels, but enable the host and the guest to understand each other in culture and life style. It would be apt, and not too early, if such a training course would be introduced along with 'Hotel Management' in the University studies. The Kashmir University and the Government could then bring about the two Kashmirs in unison to the lasting advantage of both.

Major Ethnic Groups of Jammu & Kashmir State

MAJID HUSAIN*

THE history of peopling of Jammu and Kashmir State is a record of constant impulses of immigration from the north-west, west, east and south. The alien races, ethnic groups and various religions influenced the mode of life of the people of this region. In the present paper an attempt has been made to discuss the major ethnic groups of Jammu and Kashmir in such a way so that their origin, areas of concentration, occupations, and socio-cultural traits may be ascertained.

The term 'ethnic' has been derived from the Greek word 'ethnos' meaning a tribe or race, but ethnic group has come to be more closely associated with ethos or custom as the latter is now analysed and understood in terms of laws of social learning and social inheritance, as against the former conceptions of biological and genetic determination of cultural patterns.¹ The term 'ethnic group' denotes a social group which, within a larger social system claims or is accorded a special status in terms of ethnic traits which it exhibits or is believed to exhibit. Such traits are diverse, and there is much variety in the comp-

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lexes that they form. Prominent among them pertains to religious, linguistic characteristics of the social group and their geographical origin.²

Ethnic group, in the opinion of Jordon is a group of people possessing a common ancestry and cultural tradition, with a long feeling of belonging and cohesiveness, living as a minority in a larger society.³ Each social group is the keeper of distinctive cultural traditions and the nucleus of various kinds of social interactions. An ethnic group provides not only group identity, but also friendship marriage patterns, business success, and the political power base.⁴

The mosaic of ethnic groups in Jammu and Kashmir State is complex and the race structure cannot be explained without understanding the pre-historic movements of people. In the process of people of the region, the Dards in the North-west, the Ladakhis in the east, the Gujjars and Rajputs in the south and the Paharis in the south-east have closely influenced the existing ethnicity of the people. The racial impacts were also felt by Kashmir's people and people of the northern parts of Jammu at times from the territories of Turkmenia, Tadzkistan, Uzbaikistan, Kazakistan, Georgia and Azerbaijan of the U.S.S.R. and from Turkey, Iraq and Iran. Racial impulses from these neighbouring and faraway areas have been substantial during the course of history, in their strength in influencing the local social structure.⁵

The various ethnic groups of the Jammu and Kashmir State have conspicuous geographical concentration and ramification. For example, Kashmiris are mainly concentrated in the valley bottom ; Dards occupy the valley of Gurez ; Hanjis are confined to the water-bodies (lakes and rivers) ; Gujjars and Bakarwals are living in the *kandi* areas ; Dogras occupy the outskirts of Punjab plain ; Chibhalis, Rajputs and Paharis live between Chenab and Jhelum rivers, Gaddis in the south-east of the Middle mountain region of the Jammu Division. Moreover, there are numerous small ethnic groups like Bhotas (Ladakhis), Rajputs and Sikhs which have significant concentration in isolated pockets. It is difficult to examine in detail all

these ethnic groups and, therefore, a brief account of the leading ethnic groups has been given in the following paras.

It is revealed from general statistics that the bottom and less undulating areas of the Valley of Kashmir are dominated by the Kashmiris. Their major concentration being in Anantnag, Bijbehara, Chadura, Duru, Gulmarg, Kujgam, Pahalgam, Pulwama, Shopian, Sopore, Srinagar, Sumbal and Tral. The Kandi areas of the Valley are occupied by Gujjars and the lakes and rivers are the abodes of Hanjis.

Contrary to this the border tahsils along the actual line of control *i.e.* Handwar, a Haveli, Karnah, Kupwara, Mendhar, Nowshera, Sunderbani and Uri have the dominance of Gujjars. In Haveli, Mendhar, Akhnur, Nowshera and Sunderbani tahsils of the Jammu Division, the Chibhalis (Chibs) are also in significant number.

The southern tahsils of the Jammu Division *i.e.* Akhnur, Basoli, Billawar, Bishna, Chineni, Hiranagar, Jammu, Kalakot, Ramnagar, Ranbir Singh Pora, Samba and Udhampur have the major concentration of Dogras, while the tahsils of Bhadarwah, Doda, Gul, and southern parts of Kishtwar are inhabited by Kashmiris and Paharis.

Kashmiris

Kashmiris are well spread in the different parts of the State but their major concentration lies in the Valley of Kashmir, and Kishtwar, Bhadarwah and Ramban tahsils of the Jammu Division Kashmiris have derived their name from the country they inhabit, although there are significant variations in the ethnic traits of the Kashmiris.

Historically speaking, the Greeks called Kashmir as 'Kasperia' while Herodotus—the leading Greek historian called the Valley of Kashmir as 'Kaspatyros'. Heiun Tsang termed it Kia-Shi-Mi-Ra.⁶ The Mahabharata and Puranas also referred Kashmir as a country and Kashirah as a 'people'.⁷ The etymology of the names of Jammu and Kashmir has been perplexed by the antiquarians. Wilford derives the name 'Kashmir, a very ancient and powerful tribe—which inhabited the Himalayas and Hindukush from the ancient time spreading from eastern India to the confines of Persia'.⁸ In the opinion of Vigne, the word

Kashmir is 'Kashuf-Mir' (the country of Kashuf), where as emperor Babur is of the opinion that the land has been named after 'Kas' (a hill tribe living in the neighbourhood of Kashmir),⁹ while Wilson assumed that the name Kashmir was derived from Kasyapapura, a name which he supposed to have been given to the country owing to its colonization by Rishi Kasyapa.¹⁰ In this way, numerous explanations have been advanced to account for the origin of Kashmiris. The archaeological evidences obtained from the Nareng and Burzhoma reveal that Kashmir had a Palaeolithic period.

Kashmiri is a wide term, covering several streams of people immigrated and settled in the Valley, mainly from Turkey, Iran, Central Asia, Afghanistan, Central Asia (Muslim Republics of Soviet Union). As stated at the outset, their major concentration is in the region lying between the western Himalayas and the Pir-Panjals. There is however, a close influence of the Indo-Aryans on the racial composition of Kashmiris. In fact, the Indo-Aryan religions and languages (Sanskrit) have made a close bearing on the mode of life of the Kashmiris. The influence of Sanskrit on Kashmiri is strong and cogent to this day.¹¹ Moreover, Kashmir also received racial impulses from Indo-Greeks which influenced the race structure of Kashmir considerably. The influence of Dards, Ladakh and Punjab has also moulded the ethos of Kashmiri culture.¹²

Kashmiris are broad shouldered and usually of medium to tall stature. They are much dolichocephic, have a well developed fore-head, a long narrow face, regular features and a prominent straight and finely cut toptorrhine nose.¹³ They wear short pyjamas, a long loose large sleeved gown, locally known as 'pherac' and a skull cape. In intellect they are superior to their neighbours and in disposition they are talkative, cheerful and humorous.¹⁴ Kashmiris are found in almost every subdivision of the state but their major concentration lies in the districts of Kashmir Valley where they constitute about 90 to 96 per cent of the total population.

Dards

Ptolemy in his writing 'Almagast' has used the word Daradrai for Dards and thus they have a long history of occupance of the

Kashmir Valley. Before embracing to Islam, they were the followers of Buddhism and Hinduism.¹⁵ At present they are concentrated in Dardistan (Dardesa) to the north of Kashmir Valley, especially in the catchment of Kishanganga north of Sardi, Gurez and Tilel.

In the opinion of Leitner, Dards belong to Aryan stock,¹⁶ while Ray also endorses this statement by saying that at the Dardic Aryans parted from the main Aryan mass just after their entrance into India.¹⁷ Dardic Aryans then colonised the Pamir region from where they spread to Chitral and Gilgit.¹⁸

In physical appearance, the Dards are broad shouldered, moderately stout-built and have well proportioned bodies. In face they are not handsome, their hairs are usually black but sometime brown; in complexion they are moderately fair. Their eyes are either brown or hazel. They are known for their ferocity.¹⁹ In the social hierarchy they are divisible into: (i) Rennu (ruling class), (ii) Shins (religious sect), (iii) Yashkun (cultivators), and (iv) Dum (menial class).

Hanjis

Hanjis—the dwellers of water constitute a significant ethnic group in the Valley of Kashmir. They are mainly confined to the Dal, Wular, Anchar lakes and the Jhelum river especially between Khanabal (Anantnag District) and Chattabal (Srinagar District).

There is controversy amongst the scholars about their arrival in the Valley but they agree in saying that 'Hanjis' belong to one of the ancient racial group who were essentially Nishads (boatmen).²⁰ Some of the Hanjis claim themselves as the descendants of Noah. There are historical evidences showing that Raja Pratap Sen introduced boatmen from Sangaldip (Sri Lanka). It is believed that before their conversion to Islam, they were Kashtriyas.²¹

Hanjis are sturdy, hardworking active people, with great imagination. On the basis of occupation and social status Hanjis are divisible into: (i) Demb-Hanz (vegetable growers), (ii) Gari-Hanz (waternuts gatherers), (iii) Gad-Hanz (fishermen), (iv) Mata-Hanz (who deal in wood), (v) Dunga Hanz (owners of passenger boats), (vi) Haka-Hanz (collectors of wood from

water bodies), (vii) Bahatchi-Hanz (who live in Bahatch boats), (vii) Shikara-Hanz (who ply *shikara* boats), and (ix) House-boat Hanz.

Ladakhis

Ladakhis have been named as the people of snow—living in a mountainous country, where cultivation of crops is hampered by severe cold and non-availability of water for irrigation. The people of Ladakh are a mixture of Mongoloid and Aryan races. The Aryans who originally settled in the subcontinent's northern parts were the early Buddhist people from Kashmir and the Dards of Gilgit. The Mongolian stock is traced to Tibet, from which country shepherds and nomads came to the plains of Ladakh to graze their flocks. The present day population of Ladakh is the result of blending together of Dards, the Mongols and the Mongolians.

The recent population data reveals that Ladakh is inhabited by the Buddhists, the Muslims, the Hindus, and the Christians. The Buddhists are mostly the decedents of the Mongolians and bear a close affinity with the features of the Tibetans. They are reputed for religious tolerance, honesty and hard work. There are even now some families, members of which follow different religions and yet live in peace. Where the husband and wife profess different faiths, the male child is regarded as a member of the community to which the father belongs and the female is admitted to the religion of her mother.

Buddhism does not recognise any caste or racial distinction, but some differentiation is made on the basis of social and occupational considerations. In any case the Buddhists may be classified among three principal categories, namely, Rigzang, Mangriks. and Rignu. Rigzang is the upper class and includes Gyalpo, Kushak, Klon, and Lonpo. Mangriks who constitute the middle class consist of Lamas, Unpos, Nangsu, Lorjo, and Thakshos, The lowest class which is known as Pignu includes Beda, Mou, Garra, Shinkhan and Lamkhun etc.

The Ladakhis are truthful, good natured, cheerful, friendly, industrious and honest. They are seldom angry and soon ready to become friends. In conversation they are very polite. Ladakhis

are well built and have developed sufficient resistance to work even when the temperature is as low as -24°C .

The population of Ladakhis is not increasing at a faster rate due to the prevalence of polyandry and partly on account of climatic and economic conditions which have been operating against the development of population and its increase in number.

Bhutas

Bhutas, having their origin in Tibet and Ladakh invaded the Valley of Kashmir several times. Their population is confined to Ladakh, Kishtwar and Srinagar.

The Bhutas are from the Tibetan stock of the Mongoloid race, having Turanian and Chinese features. Their cheek bones are high and the downwards face rapidly narrows, the chin is small and beard insignificant. The peculiarity is of eyes of which the outer corners are drawn out and the upper eyelids over-hung by fold of the skin. The nose is pressed and depressed at the bridge. In stature they are short, generally five feet two inches in case of men and four feet eight inches in case of women. They are hard working but those living in Ladakh have relatively short longevity.

Dogras

On the outskirts of the Siwaliks facing the plain of Punjab is the habitat of Dogras—a distinctive ethnic group of Jammu. There is a controversy among the social-anthropologists about their origin. The major concentration of Dogras lies between the two holy lakes *i.e.* Saroinsar and Mansar.²² Lake Saroinsar is at a distance of 38 kms. to the east and Mansar 64 kms to the west of Jammu city. Some scholars are of the opinion that the word Dogra is a corruption of the Rajasthani word 'Dungra' means (hills) and when the people of Rajasthan migrated in the hilly tracts under drought conditions, the Rajputs gave this name to the people of hilly country. Sten opines that the name 'Durgara' is probably a tribal designation like 'Gujara' the original of the modern Gujar, and similarly the word 'Durgara' has been

derived from Durgara through Prakrit Dogra.²³ Shastri, however, advocates the Dogra is a corrupt form of the Sanskrit term Dvigarta.²⁴

Dogras belong to the Aryan race. They speak the Dogri language—a mixture of Sanskrit, Punjabi, Persian and Urdu words. Most of them have Brahmini path and have the sects of Varnashram. A substantial section of the Dogras embraced Islam during the 16th and 17th centuries. At the time of partition of the sub-continent most of the Muslims Dogras migrated to Pakistan.

Dogras are short statured, slim and have high shoulders. Their complexion is wheatish, slightly hooked nose, brown eyes, jet-blacks hairs and beard are worn. The lower classes of Dogras have blackish complexion.

Chibhalis

The Chibhalis belong to the Dogra racial group. They occupy the southern slopes of Siwaliks between Chenab and Jhelum rivers which was called as Chibhal by the Muslim rulers of the Medieval period.²⁵ One of the Rajput clans, namely 'Chib' inhabited this region.

Chibhalis are mainly the followers of Islam. In appearance they resemble to Dogras. They are, however, more strong as compared to the surrounding ethnic groups.²⁶ Chibhalis are concentrated in Akhnur, Mendhar, Haveli, Rajauri tahsils and in some parts of the Nowshera (Fig. 1). The basic occupation of Chibhalis is cultivation of crops and pastoral herding. Some of them living in urban places are engaged in trade and commerce.

Gujjars

The early history of Gujjars is obscure. There are several theories about their origin. According to one school of thought before their arrival in the sub-continent they were the inhabitants of Georgia (Gurjia) a territory situated between the Black Sea and the Caspian Sea in the Soviet Union. Under certain pull and push factors they left their habitat and through Central Asia, Iraq, Iran and Afghanistan crossed the Khyber Pass to

enter into the sub-continent of India. In the sub-continent making a southward-march they reached Gujarat through the plains of Indus, wherefrom at the occurrence of droughts they entered the green pastures of Siwaliks and the Himalayas.²⁷ Having their place of origin as Georgia and moving towards the sub-continent of India they named several settlements after their name *e.g.* Juzrs (Gurjara), Gujrabad, Gujru, Gurjara, Gujarkhan, Gujran-wala in Iran, Afghanistan, Turkmenia and Pakistan. In the opinion of some of the social anthropologists Gujjars probably got their name from the Sanskrit word, Gurjara—the original name of Gujarat. They were Hindus at the time they were first noticed in the subcontinent and later on embraced Islam.²⁸

In the opinion of Arab geographers, Gujjars were the inhabitants of Juzr. Al-Idrisi states that Jurz or Juzr was the hereditary title of a king as well as the name of a country.²⁹ The Arab writers called the Gujjars as Jurze or Juzrs because in Arabic language there is no sound of the letter 'g'. Consequently they change it systematically into the softer sound of 'jim'. In the 9th and 10th centuries the greater parts of Rajasthan or Rajputana was called by the name of 'Gujjardesa' (Land of Gujjars). It appears that Rajuptana or Rajasthan was not known by this name in ancient times. Gujardesa was applied to Rajasthan as early as the 5th Century A.D.³⁰ The Gurjara kingdom ceased to exist at time of Akbar the Great when their country was annexed.³¹

The diffusion and spread of Gujjars in the State of Jammu and Kashmir is not definitely known. When the Gujjars of Jammu and Kashmir are asked about their place of origin they simply say that their forefathers had migrated from Gujarat and Rajputana (Rajasthan). The arrival of Gujjars in Jammu and Kashmir is attributed to the outbreak of serious droughts and famines in Rajasthan, Gujarat and Kathiawad. It is stated that at the occurrence of droughts, a segment of the cattle rearing, migratory tribes (Gujjars) moved to the Punjab while others moved further to areas now known as Kaghan, Swat, Hazara, Gilgit, and the Valley of Kashmir. There are archaeological evidences to prove that there was a spell of dryness in the 6th and 7th centuries in Rajasthan which led to the outmigration of people and these people (Gujjars) along with their cattle

entered the green hilly tracts of the Siwaliks and sub-Himalayas.³² The 'Gujri' language is now recognised to be a form of Rajasthani language which supports the hypothesis that Gujjars have out-migrated from Rajputana³³ (Rajasthan).

The major concentration of Gujjars lies in Jammu, Rajauri, Udhampur, Poonch, Uri, Ganderbal and the *kandi* area of the Kashmir Valley. Although they have started developing land connections but they are essentially cattle rears and a section of them—the Bakarwals still oscillates between the southern slopes of the Siwaliks and the *margs* (Alpine-Pastures) of the Middle Himalayas.

Gaddis

The word Gaddts or Guddies is associated with the terms in usage for high-pastures and therefore, they are shepherds. Gaddis possess large flocks of sheep and herds of goats and they migrate with their flocks to different altitudes in search of grass and water according to the seasons.

The Valley of Bhandil near Chamba (Himachal Pradesh) is the area dominated by Gaddis. They are also present in substantial number in the south-eastern parts of Jammu Division. Some of them live in small villages in the Upper reaches of the Tawi river. Their concentration is however, significant in Dudu Valley of the Ramnagar Tahsil of the Jammu Division.

Gaddis are essentially Rajputs and are the followers of Hinduism. In physique they resemble closely to Paharis and due exposure to the sun and rains, they have dark wheatish complexion.

Apart from the ethnic groups discussed above, there are Sikhs and Rajputs (Rajputras) who are sprinkled in the various parts of the State especially in the southern parts of the Jammu Division.

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9

Gujara-Bakarwal Transhumance in Jammu and Kashmir Himalayas: Responses of Spring Migrations

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THE Gujar-Bakarwals are sheep and goats rearing pastoral nomads, who transhume within the territorial of the Jammu and Kashmir state from the south of the Pir-Panjal range to the alpine pastures of the Greater Himalayan ranges in the north with their *khema* (tents) and *river* (flocks) round the year. They are skilful goat and sheep breeders and constitute a sizeable population in the Jammu and Kashmir state.

Their pastoral economy is dependent upon the availability and utilization of natural pastures. These pastures are markedly seasonal in their occurrence. During winter, when the higher Himalayan ranges in the north are covered with snow, the pasturage is available only on the Siwalik ranges in the south. As summer approaches, the pastures in the lower reaches dry up, but those higher up begin to thaw. As a result, the Gujar Bakarwal summer move back and forth from the lower Himalayan region to

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the pastures in the upper Himalayan ranges. Over the years the Gujar-Bakarwals have followed well defined tracks known as *rasto* from *sardiyaon ki charagha* (winter areas) to the *dhoks* (summer areas) and drive large *revar* (herds) through snow clad galis (mountain passes), over the ridges, streams and rivers. They have developed an annual set schedule of activities (Fig. 1), and seasonal migration along with *paraos* (halts), departures, durations of occupation of the different localities, round the year.

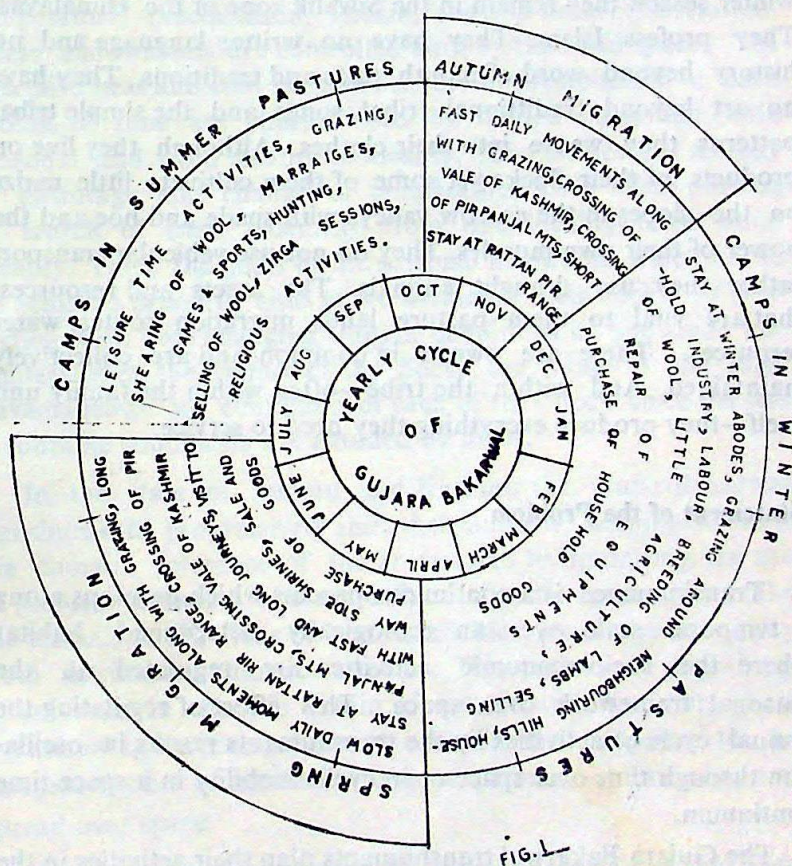


Fig. 1.

In the mid-April when spring migrations start they lead their flocks through the Pir-Panjel passes and Valley of Kashmir far up into the high Himalayan alpine pastures, where pasture

lands turned green again by melted snow. Here they remain, living in tents or *dharas* (temporary hut) drifting on traditional course from pasture to pasture until the summer begins to cool in the end of September. In autumn season they return to the northern side valleys of the main valley of Kashmir near their summer resorts, and stay there for twenty days. Late in October they travel over to their winter resorts by their traditional routes again after crossing the Valley of Kashmir and Pir-Panjal range passes by November. From November to April, throughout the winter season they remain in the Siwalik zone of the Himalayas. They profess Islam. They have no written language and no history beyond word-of-mouth tales and traditions. They have no art beyond traditional tribal songs and the simple tribal patterns they weave into their clothes. Although they live on products of their flocks yet some of them cultivate little maize on the slopes in the narrow valleys with spade and hoe and the power of their own muscles. They do not use vehicular transport rather they use draught animals. The assets and resources, that are vital to them—pasture lands, migration routes, water resources. These are owned in common and are collectively maintained. And within the tribe—often within the family unit itself—they produce everything they need to service.

Statement of the Problem

Transhumance is a continuous process which develops along a temporal scale over an ecologically determined habitat where the socio-economic activities are regulated in the seasonal framework over space. This effort of regulating the annual cycle of activities by the transhumants results in oscillation through time over space or in cyclic mobility in a space-time continuum.

The Gujara Bakarwal transhumants plan their activities in the hill terrain of Jammu and Kashmir into four major segments of time *i.e.*, winter, spring, summer and autumn. They act and occupy seven different altitudinal zones or localities in succession on space in different months from winter areas to summer areas and vice versa. Where as their activities are correlated with

the two most pronounced time-cycles in the physical environments *i.e.* spring and autumn migrations.

The connected activities of transhumance in time over space mainly depends on the utilization of natural resources available for their animals, where different areas in different seasons succeed each other in providing the necessary grazing for their flocks. The activities are controlled both by the passing of time as well as crossing over the space zones in regulating their daily marches according to changing environmental conditions *i.e.* temperature, precipitation, terrain, soil and natural vegetation. These endowments are controlled both by time and space. The excessive heat and cold both and nature of precipitation in each ecological zone are characterised by limited pasturage both seasonal and from locality to locality. Thus the seasonal scarcity of pasturage and change in temperature keep them pushing in search of fresh pasturage from one locality to the other locality. Thus, the goals of the seasonal migrations which are to be achieved primarily aims at the welfare of their flocks by protecting them from changing climatic conditions in one area. The limitations on the welfare of the flocks are those of the most advantageous of conditions of each of the flock since the less favourable conditions are avoided by flight.

In the state of Jammu and Kashmir the Gujar-Bakarwal transhumants progressively shift their animals, keeping in view the climatic tolerance of the animal and to optimising the use of pastures between altitude-defined climatic zones. They take the animals to the areas of best available pasturage and away from detrimental climatic extremes. This pattern of migrations is universal in the hill terrain of Jammu and Kashmir, where the annual cycle of transhumant activities is a response to the seasonal rhythm of annual behaviour patterns in its temporal spread over space.

The day-to-day response of the marching transhumants, their movement patterns and resource extraction have been taken up for analysis in the following pages on the basis of data during spring migrations.

Data Base and Methodology

With a view to understanding the behavioural aspects of transhumant groups, a *roznamcha* (daily diary Appendix 1) was maintained for an annual cycle in the case of two *Kafilas* one each along the Pir-Panjal and Banihal Pass routes. (Fig. 3) The data provided by the two *roznamcha* are analysed as below :

The daily mode of March directly depends on the work timings on each day, which has a direct bearing on the decisions, whether to move or to stay on at a place during migrations. These are rising, packing, departure and arrival timings. The length of the march directly depends on the circumstances and situations faced on a particular day. Here the purpose is to devise relatively more objective measures to gauge the reactions of transhumants in a particular geographic zone through which they migrate annually. The analysis is based on the data recorded in the migration schedule concerning the time of awakening, the packing departure, arrival, length of daily march, the total journey days, *parao* (halt) days number of *dhiyara* (continuous journey for several days with night halts only) in a particular geographic zone through which they pass.

The assumption is that, apart from the interference caused by random and unexpected factors and changing natural obstacles, these timings reflect the mental state of a marching group. While marching through a particular geographic zone of there is early awakening, more rapid packing, early departure, late arrivals and long marches, indicates that this zone is not a favourable zone for their flock. This can be interpreted as the zone of maximum tension. The causes of tension in different geographic zones observed during migration are accidents, death, birth, search of lost animals, rain, hail, snowfall, rock avalanches, non-availability of fodder, poisonous grasses, wild animals, animal thefts, crops on fields, payment of tax, fear from civil and forest authorities and traffic congestion due to other moving *Kafilas*. It may however, be noted that this very pattern reflects excitement and not tension if transhumants are moving on the slopes facing the intervening and summer pastures. Late rising, less rapid packing late departure, slow and short marches express relaxation, safety

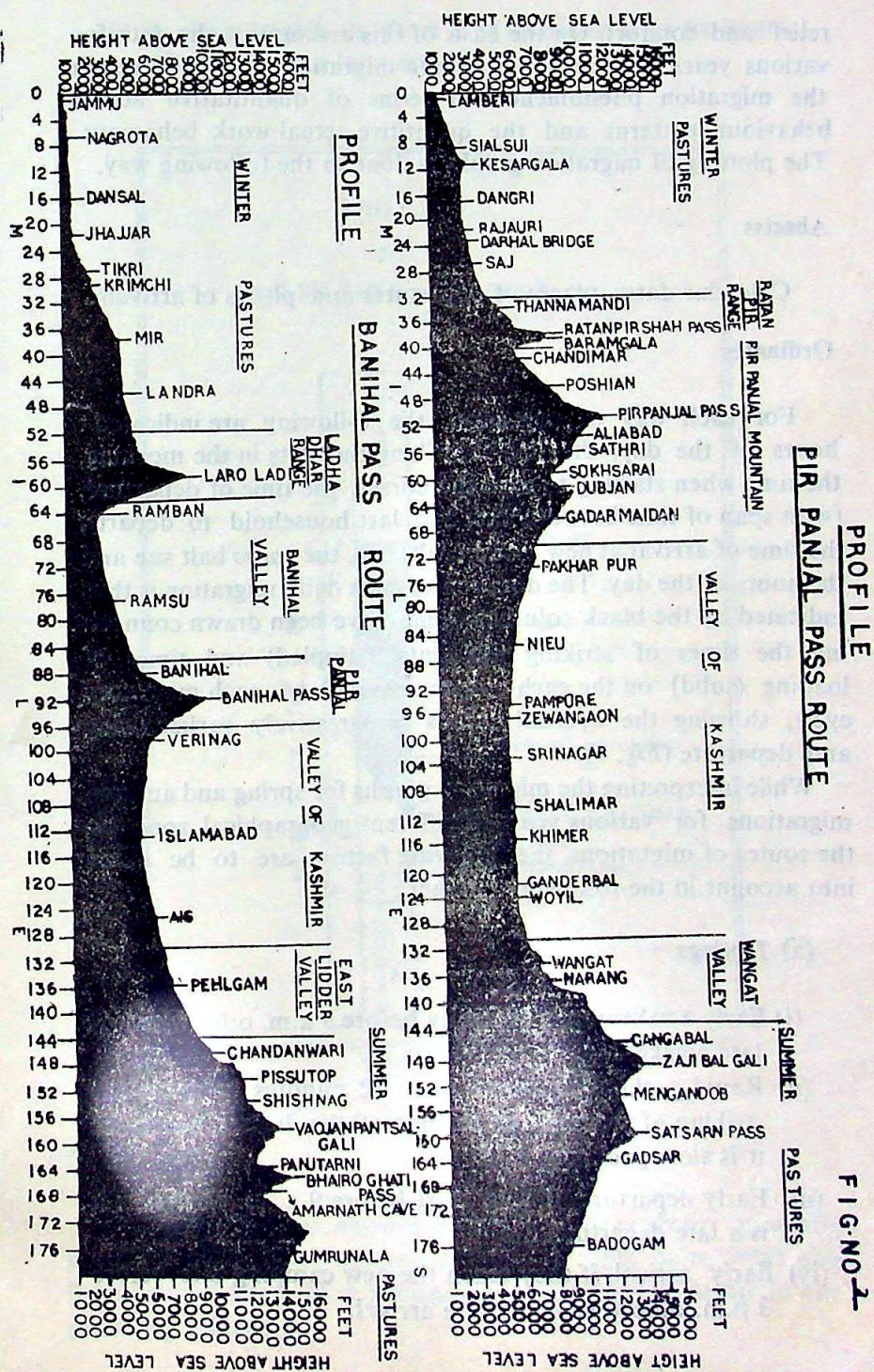


FIG. NO. 2

relief and comfort. On the basis of this assumption the data for various years have been plotted into migration graphs to explain the migration phenomenon in terms of quantitative actual behaviour patterns and the quantitative actual work behaviour. The plotting of migration graphs is done in the following way.

Absciss

Calendar dates, places of departures and places of arrivals.

Ordinates

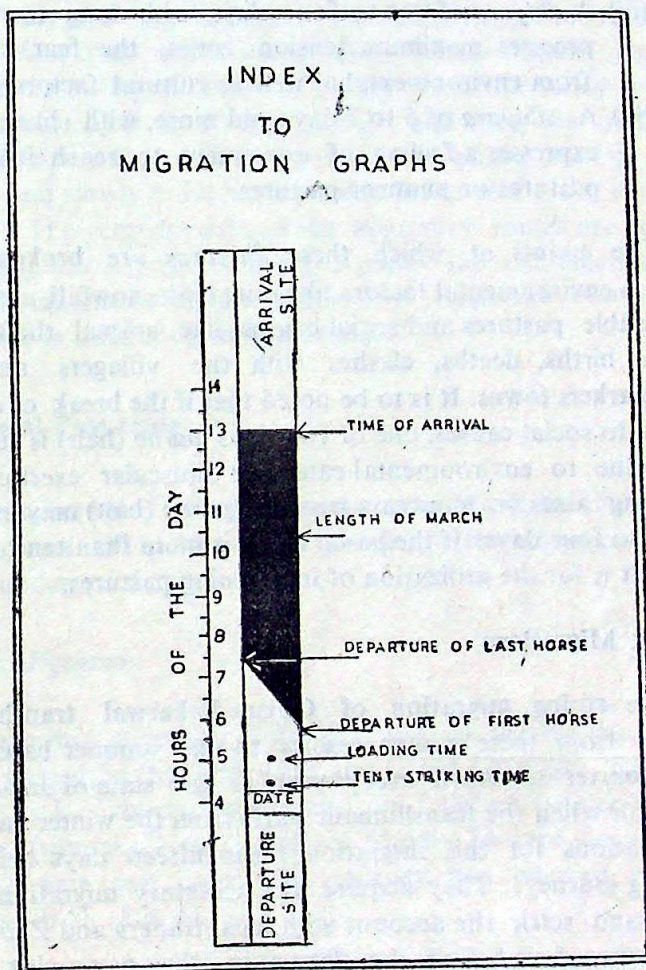
For each day of migration, the following are indicated : hours of the day, the time of striking the tents in the morning, the time when starting to load the horses, the time of departure, (with span of time between first and last household to depart), the time of arrival at new *parao* (halt) site, the *parao* halt site and the hours of the day. The duration of each daily migration is thus indicated by the black columns. Lines have been drawn connecting the times of striking the tents (stippled) and times of loading (solid) on the each consecutive day of each migratory cycle, showing the cyclical trends progressively earlier rising and departure (*Fig. 4*).

While interpreting the migration graphs for spring and autumn migrations for various years in different geographical zones on the routes of migrations, the following factors are to be taken into account in the following manner :

(a) *Timings*

- (i) Early awakening is generally before 7 a.m. otherwise it is late awakening.
- (ii) Rapid packing consumes 15 to 30 minutes between the striking of the tent and loading of the horses, otherwise it is slow packing.
- (iii) Early departure, if they start before 9 a. m. otherwise it is a late departure.
- (iv) Early arrival, if they reach the new camping site before 3 p.m. otherwise it is a late arrival.

- (v) A daily march is short if it takes less than six hours-otherwise it is a long march.



(b) *Dhiyara*

In interpreting the *dhiyara* (which is progressively a continuous journey for several days with night halts only), the behaviour pattern of a transhumant is to be considered in the following manner :

- (i) A *dhiyara* of one day with short march expresses only the shift in a camping site for grazing purposes.
- (ii) A *dhiyara* of two days with short marches express the utilization of available natural resources.
- (iii) A *dhiyara* of two to four days with long marches expresses maximum tension zones, the fear stemming from environmental as well as cultural factors.
- (iv) A *dhiyara* of 5 to 7 days and more, with short marches expresses a feeling of excitement to reach intervening pastures or summer pastures.

The points at which these *dhiyaras* are broken reveal certain environmental factors like rain, hail, snowfall, availability of usable pastures and social causes like animal thefts, accidents, births, deaths, clashes with the villagers and visits to markets towns. It is to be noted that if the break of a *diyara* is due to social causes, one or two days *parao* (halt) is sufficient. It is due to environmental causes or muscular exertion after crossing a major mountain pass, the *parao* (halt) may even last three to four days. If the *parao* (halt) is more than ten to fifteen days, it is for the utilization of intervening pastures.

Spring Migrations.

The spring migration of Gujara-Bakarwal transhumants begins from their winter resorts to the summer bases in the last quarter of April every year in the state of Jammu and Kashmir when the transhumant starts from the winter bases, the preparations for this migration begin fifteen days before the ensuing journey. They acquire the necessary migration-equipments and settle the account with local traders and *Zamindars*. One or two days before the departure, they pay a visit to the holy shrine of their ancestors. On the day of departure they start early in groups of 10 to 15 families with all their household belongings. The remaining families of the same *Kafila* follow these marching members after an interval of two to three days in groups,

These groups march daily and cover short distances till they reach intervening pastures. After staying at intervening pastures

for about 15 to 20 days all groups unite to form a bigger group. Then these big groups move together through the Pir-Panjal mountain passes making few halts except for rest and grazing. After crossing the Pir Panjal mountain zone these marching groups stay for two to three days on the fringes of Kashmir valley. Here they make preparations for the onward journey through the Valley of Kashmir. They cross the valley in very long marches by making very few halts and after the trek they enter the side valleys. Here the *Kafila* members stay in small groups and slowly move in short marches to reach the summer resorts. The yearwise data of the migratory routes are plotted in the migration graphs and Fig. 5 plains the characteristics of the daily marches and the behavioural responses observed in each year in different geological zones.

Pir-Panjal Pass route

The partners of spring migration on the Pir-Panjal Pass route in the years 1973, 74 and 79 revealed by the migration graphs are as under :

Spring Migration

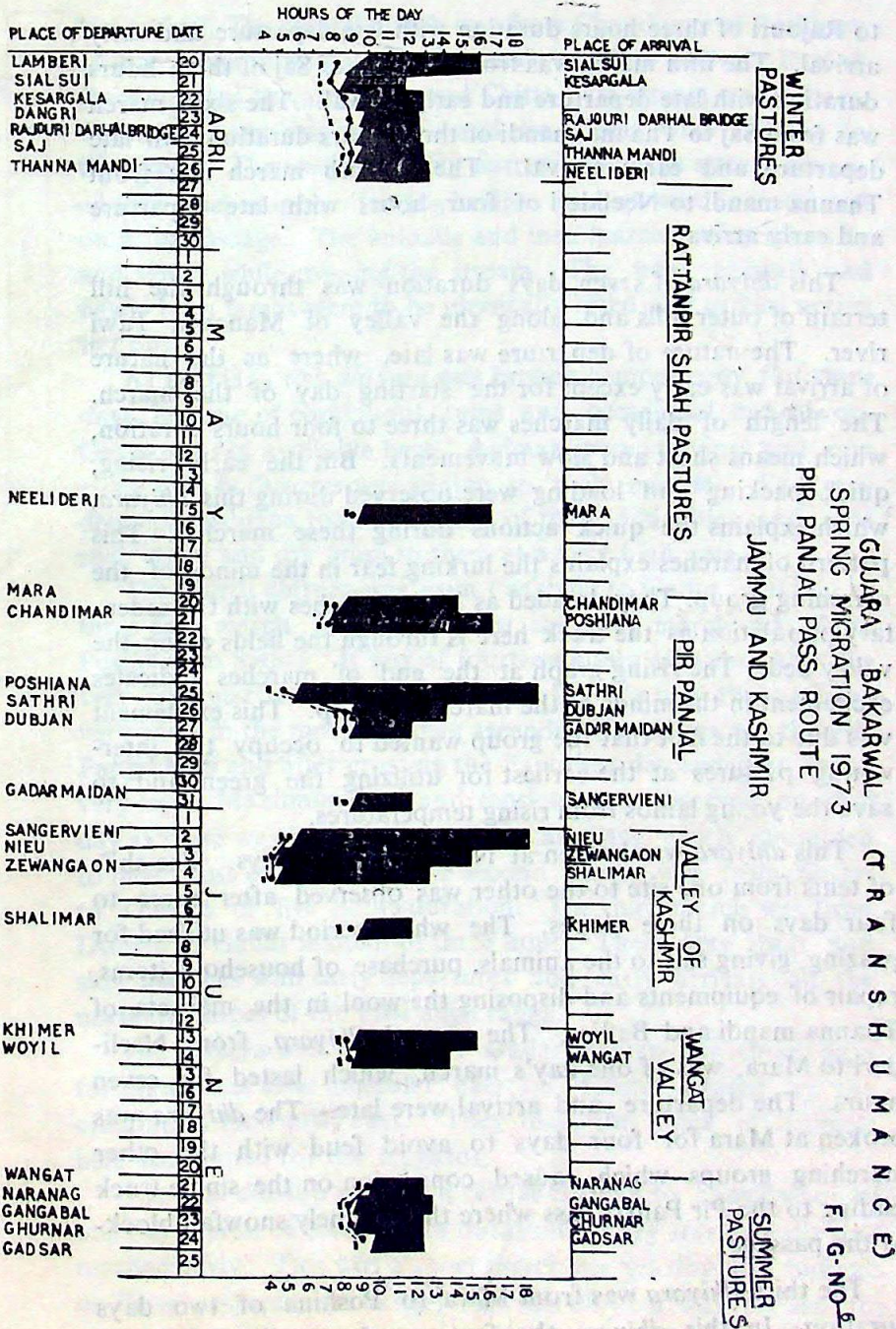
The spring migration in the year 1973 on the Pir-Panjal Pass route started on the 20th April and lasted up to the 25th June, which took sixty-six days in all from Lamberi (winter base) to Gadsar (summer resort). Out of 66 days 24 were journey days and 42 were halt days. This journey was covered by nine *dhiyaras* in all (Fig. 6).

The first *dhiyara* was of seven days duration from Lamberi to Neelideri on Rattan Pir Shah range (intervening pastures). In this *dhiyara* the first march was from Lamberi to Sialsui of seven hours duration with late departure and arrival. The second march was from Sialsui to Kesargala of four hours duration with late departure and early arrival. The third march was from Kesargala to Dangri four hours duration with late departure and early arrival. The fourth march was from Dangri

**FACTORS INFLUENCING GUJARA BAKARWAL SPRING MIGRATIONS IN JAMMU & KASHMIR
APRIL, MAY, JUNE.**

FACTORS	TOPOGRAPHIC				REGIONS			REMARKS
	OUTER HILLS 2000'-4000' FT. 610-1220 MTS	MIDDLE RANGE MOUNTAIN 8000' FT. 2440 MTS	PIR PANJAL, MTS 9000'-12000' FT. 2743-3658 MTS	VALLEY OF KASHMIR 6000'-7000' FT. 1830-2131 MTS	SIDE VALLEYS 7000'-8900' FT. 2133-2240 MTS	NORTHERN, MTS. 8200'-13500' FT. 2500-4115 MTS		
SNOW FALL	NO SNOW FALL	SNOW MELT IN APRIL GRASSES START SPROUTING	SNOW MELT IN APRIL GRASSES MAY START SPROUTING	SNOW MELT IN MARCH FIELD ARE PREPARED	SNOW MELT IN APRIL GRASSES START SPROUTING	SNOW MELT IN MAY JUNE GRASSES START SPROUTING	SPRING MIGRATIONS START IN MID-APRIL EVERY YEAR	
TEMPERATURE	WARM	MODERATELY COOL	COOL	MODERATE	COOL	COOL		
RAIN FALL	NO RAIN FALL	HAIL STORM & RAINS	HAIL STORM & RAINS	'NO RAIN	OCCASIONAL RAIN	NO RAINS		
GRASSES	START DRYING UP NO NUTRITIONAL VALUE	GOOD NUTRITIONAL GRASS BUT FOR SHORT PERIOD	GOOD GRASS	FIELDS	GOOD GRASS	ABUNDANT & GOOD GRASS		
SOILS	DRY SOILS	SLIPPERY	SLIPPERY	GOOD	SLIPPERY	GOOD		
WATER SUPPLY	ADEQUATE							
ANIMAL DISEASES	YES	NO	NO	NO	NO	YES		
HUMAN GROUPS	HOUSE HOLD UNITS	HERDING UNITS COLLECT ONE AFTER THE OTHER	KAFILA IS FORMED AND MOVES TOGETHER WITH TENTS & ANIMALS		DIVIDED INTO HERDING UNIT TENTS	HOUSE HOLD UNITS & KOTHAS		
RELATION WITH OUTSIDERS	SEDENTARY POPULATION	ANIMALS ARE STOLEN BY VILLAGERS	FOREST DEPTT PUT PENALTIES	ANIMALS ARE STOLEN BY VILLAGERS	FOREST DEPTT PUT PENALTIES	ROAM FREELY		
	APRIL		MAY		JUNE			

Fig. 5



to Rajouri of three hours duration with late departure and early arrival. The fifth march was from Rajouri to Saj of three hours duration with late departure and early arrival. The sixth march was from Saj to Thanna mandi of three hours duration with late departure and early arrival. The seventh march was from Thanna mandi to Neelideri of four hours with late departure and early arrival.

This *dhiyara* of seven days duration was through the hill terrain of outer hills and along the valley of Manawar Tawi river. The nature of departure was late, where as the nature of arrival was early except for the starting day of the march. The length of daily marches was three to four hours duration, which means short and slow movements. But the early rising, quick packing and loading were observed during this *dhiyara*, which explains the quick actions during these marches. This pattern of marches explains the lurking fear in the minds of the marching group. They dreaded as having clashes with the sedentary population as the track here is through the fields along the valley bed. The rising graph at the end of marches indicates excitement in the minds of the marching group. This excitement was due to the fact that the group wanted to occupy the intervening pastures at the earliest for utilizing the green and to save the young lambs from rising temperatures.

This *dhiyara* was broken at Neelideri for 18 days. The shift of tents from one site to the other was observed after three to four days on these slopes. The whole period was utilized for grazing, giving salt to the animals, purchase of household items, repair of equipments and disposing the wool in the markets of Thanna mandi and Bafliaz. The second *dhiyara*, from Neelideri to Mara, was of one day's march, which lasted for seven hours. The departure and arrival were late. The *dhiyara* was broken at Mara for four days to avoid feud with the other marching groups which caused congestion on the single track leading to the Pir Panjal Pass where the untimely snowfall blocked the passage.

The third *dhiyara* was from Mara to Poshina of two days duration. In this *dhiyara* the first march was from Mara to Chandimar of seven hours duration, with early departure and

late arrival. The second march was from Chandimar to Poshiana of nine hours duration with early start and late arrival. During these marches the group crossed Chitta-Pani stream many times, where the water was very cold and ice pieces were floating in the stream. The track was very narrow along the stream hemmed with steep slopes. The log bridges (*seems*) were constructed on it for passage. The animals and men marched very carefully and slowly while crossing the stream. The weak animals and newly born lambs were to be physically lifted and carried across in arms.

At Poshiana this *dhiyara* was broken compulsorily for three days, because of continuous rains and occasional hail-storms. Grass was not available here. Animals were starving and rain along with hailstorms was adding to their miseries. The residents of Poshiana took advantage of their difficulties and sold their straw and dry grass to them at a very high rate.

The fourth *dhiyara* was from Poshiana to Gadar maidan of three days march. In this *dhiyara* the first march was from Poshiana to Sathri. It was of fourteen hours duration and the very long march on the entire route. On this day they started very early in the morning, they ascended the slopes to the Pir-Panjal Pass and after crossing the Pass they descended at Sathri very late. Maximum fear and tension was observed on that day as there was heavy snow fall on the Pass which amounted to heavy loss of animals. The second march was from Sathri to Dubjan of five hours duration. The third march was from Dubjan to Gadar maidan of three hours. These were short and slow marches with early departures and early arrivals on the northern slopes of the Pir-Panjal range.

The *dhiyara* was broken at Gadar-maidan for three days for taking rest after muscular exertion, fatigue caused by the crossing of Pir-Panjal Pass. They took the stock of animals here and waited for the laggards.

The fifth *dhiyara* was from Gadar maidan to Sangerveini of one day march of three hours duration. They started early and reached early. This was a short march for grazing the animals on these pastures. At Sangerveini this *dhiyara* was broken for one day for collection of fire wood to be utilized in the next journey through the valley of Kashmir, where no fire wood is

available. Some collected this wood for sale in the village *en route* to the Kashmiri peasants and make some money out of it.

The sixth *dhiyara* was from Sangerveini to Shalimar of three days and thirty hours duration. In this *dhiyara* the first march was from Sangerveini to Nieu and it took thirteen hours, which is the second largest march on the route of migration. This march was through the villages of Kashmir Valley plains. The march started early and arrival was late which explains the tension and fear in the minds of the marching group. The second march was from Nieu to Zewangaon which took nine hours, the departure and arrival timings were early and late respectively. The third march was from Zewangaon to Shalimar which took eight hours with early departure and arrival. All these marches were over the fields of Kashmir valley plains, where the peasants do not allow them to make a halt. They pushed their animals half starved through long marches to avoid clashes with the peasants of the area.

The *dhiyara* was broken at Shalimar for two days. This was for taking rest after long marches and to make purchase of household items from the Srinagar city. The seventh *dhiyara* was from Shalimar to Khimer of one day for three hours duration, with late departure and early arrival. Actually this was shift in site from Shalimar to Khimer as, many other *Kafilas* reaching Shalimar caused congestion. This *dhiyara* was broken for five days at Khimer to wait for the shepherds and flock, who were coming over the ridge from Zewangaon to Shalimar.

The eighth *dhiyara* was from Khimer to Wangat for two days and of twelve hours duration. In this *dhiyara* the first march was from Khimer to Woyil of seven hours duration with early departure and early arrival. The second march was from Woyil to Wangat of five hours duration with early departure and early arrival.

At Wangat this *dhiyara* was broken for six days. This break was utilized for sowing seeds on their fields, purchasing of household items from Kangan for the use during summer and wait for shepherds and flock coming over the ridges.

The ninth *dhiyara* was of four days duration from Wangat to Gadsar. In this *dhiyara* the first march was from Wangat to

Narnang of three hours duration with late departure and early arrival. This march was along the Wangat Nalla. The second march was from Narnang to Gangabal of five hours duration, with late departure and early arrival. Third march was from Gangabal to Churnar of four hours duration with late departure and early arrival the Satsarian Pass was crossed by this march. Fourth march was from Churnar to Gadsar of three hours duration with late departure and early arrival. Gadsar is the summer base of this group and they spend the whole summer on the pastures in the vicinity.

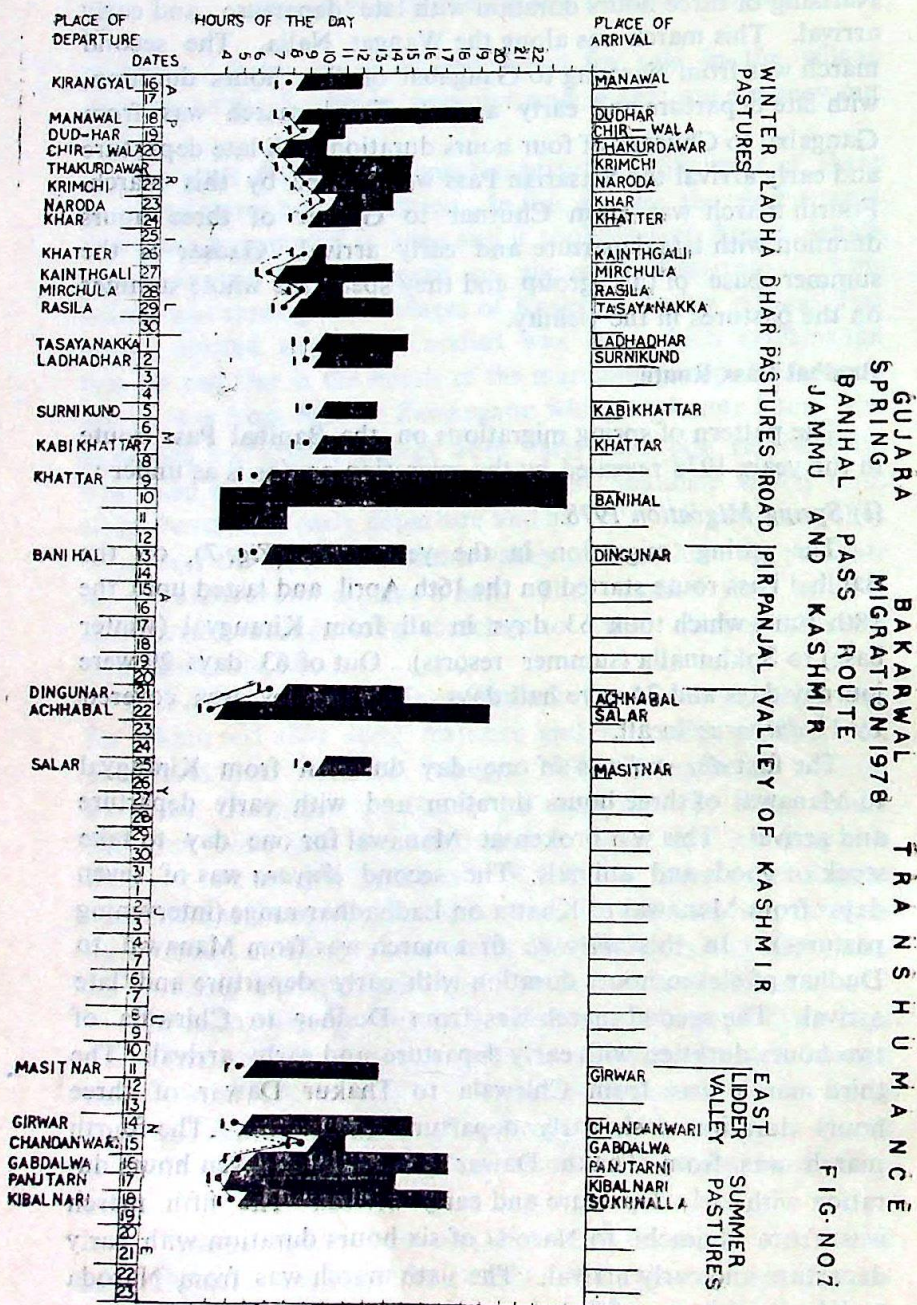
Banihal Pass Route

The pattern of spring migrations on the Banihal Pass route in the years 1978 revealed by the migration graphs is as under :

(i) Spring Migration 1978

The spring migration in the year 1978 (Fig. 7), on the Banihal Pass route started on the 16th April and lasted upto the 18th June, which took 63 days in all from Kirangyal (winter base) to Sokhnnalla (summer resorts). Out of 63 days 29 were journey days and 34 were halt days. This journey was covered by 12 *dhiyaras* in all.

The first *dhiyara* was of one day duration from Kirangyal to Manawal of three hours duration and with early departure and arrival. This was broken at Manawal for one day to take stock of goods and animals. The second *dhiyara* was of seven days from Manawal to Khatta on Ladhadhar range (intervening pastures). In this *dhiyara* first march was from Manawal to Dudhar of eleven hours duration with early departure and late arrival. The second march was from Dudhar to Chirwala of two hours duration with early departure and early arrival. The third march was from Chirwala to Thakur Dawar of three hours duration with early departure and arrival. The fourth march was from Thakur Dawar to Krimchi of seven hours duration with early departure and early arrival. The fifth march was from Krimchi to Naroda of six hours duration with early departure and early arrival. The sixth march was from Naroda to Khar and it was of four hours duration with early departure and early arrival. The seventh march was from Khar to Khatta of three hours duration with early departure and early arrival.



This *dhiyara* of seven days was through the hill terrain outer hills among the sedentary population. The length of the marches was small to medium in length along with early departure and early arrival which explains the slow movement. This pattern of marches explains that there was a fear of clashes with the sedentary population over fields and from animal lifters. The rising graph at the end of marches indicates excitement in the minds of the marching group. This excitement was due to the fact that the group wanted to occupy the intervening pastures at the earliest for utilizing the green grass of these pastures and to save the young lambs from rising temperatures. This *dhiyara* was broken at Khatta for one day for rest after continuous marches and search for lost horses.

The third *dhiyara* of four day's duration was from Khatta to Tasaya-Nakka. In this *dhiyara* the first march was from Khatta to Kainthgali of one hour's duration with late departure and early arrival. The second march was from Kainthgali of one hour's duration with late departure and early arrival. The second march was from Kainthgali to Mirchula of seven hour's duration with early departure and arrival. The Third march was from Mirchula to Rasila, of two hours duration with late departure and early arrival. The fourth march was from Rasila to Tasaya-Nakka of five hours duration with early departure and arrival. This *dhiyara* was broken at Tasaya-Nakka for one day for rest after continuous march.

The fourth *dhiyara* was from Tasaya Nakka to Surni-Kund of two days duration. In this *dhiyara* the first march was from Tasaya Nakka to Ladha Dhar of five hours duration with late departure and early arrival. The second march was from Ladha Dhar to Surnikund, of four hour's duration with late departure and early arrival. This *dhiyara* was broken at Surnikund for two days for rest and grazing.

The fifth *dhiyara* was of one day's duration from Surnikund to Kabi-Khattar which lasted three hours with late departure and early arrival. This *dhiyara* was broken at Kabikhattar for one day for rest and grazing.

The sixth *dhiyara* was of one day's duration from Kabi-Khattar to Khattar, which lasted for four hours with late de-

parture and early arrival. This *dhiyara* was broken for one day at Khattar for rest and grazing.

The seventh *dhiyara* was of three days' duration from Khattar to Shaitan nalla (Banihal). In this *dhiyara* the first march was from Khattar to Ramban. After taking food and rest for a few hours, they started the second march from Ramban to Ramsu. At Ramsu they again took food and some rest for a few hours and started from Ramsu to reach Shaitan nalla (Banihal). This was a continuous journey of 23 hours' duration on the national highway. The maximum tension was observed in the minds of the marching group due to fear from accidents, animal lifters, lack of fodder. This *dhiyara* was broken at Shaitan nalla (Banihal) for one day for rest after long and continuous march.

The eighth *dhiyara* was of one day's duration from Shaitan nalla (Banihal), to Dingunar. This lasted for eight hours with early departure and late arrival. In this *dhiyara* the group crossed the Banihal Pass through the Jawahar Tunnel. But the animals came over the Banihal Pass, where rain and hail storm caused death to some of the animals. At Dingunar the *dhiyaras* was broken for seven days for rest and grazing after crossing the Banihal Pass.

The ninth *dhiyara* was of two days' duration from Dingunar to Salar. The first march was from Dingunar to Achhabal of fourteen hours' duration with early departure and late arrival. The second march was from Achhabal to Salar of twelve hours duration with early departure and late arrival. During these marches they crossed the plains of the valley of Kashmir where the Kashmiri peasants put resistance to them and to avoid clashes with them they pushed their animals in long marches. At Salar this *dhiyara* was broken for two days for rest and wait for laggards.

The tenth *dhiyara* was from Salar to Masitnar of one day's duration which lasted for three hours with late departure and early arrival. This *dhiyara* was broken at Masitnar for sixteen days. This break was utilized for sowing seeds on their fields, purchase of household goods from Aishmuqam for the use during summer.

The eleventh *dhiyara* was from Masitnar to Girwal of one day's duration, which lasted for eight hours with early departure

and early arrival. This *dhiyara* was broken at Girwar for two days to help the relatives in their sedentary activities.

The twelfth *dhiyara* was of five days' duration from Girwar to Sokhnalla. In this *dhiyara* the first march was from Girwar to Chandanwari of ten hours' duration with early departure and late arrival. The second march was from Chandanwari to Gabdalwa of two hours' duration with early departure and early arrival. The third march was from Gabdala to Panjtarni of twelve hours' duration with early departure and late arrival. The fourth march was from Panjtarni to Kibalnari of nine hours' duration with early start and late arrival. The fifth march was from Kibalnari to Sokhnalla of ten hours' duration with early start and late arrival.

All these marches were on the mountainous terrain dotted with snow and greengrass. The *dhiyara* was broken at Sokhnalla for the whole of summer for grazing on these summer pastures.

•Composite Panorama of Spring Migration

The above yearwise description of the marches during spring migration reveal that the entire journey during spring migrations covered from 66-72 days on Pir Panjal Pass route and 64-65 days on Banihal Pass route in different years (Table 1 & 2). The average daily distance covered by them in different years is between 9 and 13 kilometres barring a few long journeys through the Pir-Panjal mountain zone and the valley of Kashmir. Tables I and II show the details of journey and halt days taken on each route and in each zone during spring migrations in different years. These tables reveal that in comparison to Pir Panjal Pass route the number of journey days are more on the Banihal Pass route. But in case of *parao* (halt) days the number exceed the journey days on both the routes which explains that the spring migration is a leisurely affair for them on the two routes, except on Pir-Panjal range and valley of Kashmir. The above analysis reveals that the ecology of the area has a strong influence on the nature of marches and halts. It explains a strong correlation between the nature of marches and the geographic zones which they cross.

TABLE 1

Number of Days Taken Each Topographic Zone During Spring Migration

Pir Panjal Pass Route										Banihal Pass Route					
S. No. Topographic Zone	Journey Days		Parao (Halt) Days		Total Days Taken in one Zone			S. No. Topographic Zone	Journey Days		Halt Days		Total Days		
	1973	1974	1979	1973	1974	1979	1973		1978	1979	1978	1979	1978	1979	1979
1. Winter Resorts to intervening Pastures	7	7	6	0	0	0	7	(1) Winter Resorts to intervening Pastures	5	4	1	2	6	6	6
2. Intervening Pastures (Rattan Pir Shah Range)	0	0	0	18	15	9	18	(2) Intervening Pastures (Ladha Dhar Range)	11	9	5	17	16	26	26
3. Pir-Panjal Zone A) Southern Slopes B) Northern Slopes	7	8	7	11	14	18	18	(3) Pir-Panjal Zone A) Banihal Valley B) Banihal Pass to Verinag	3	3	1	0	4	3	3
4. Valley of Kashmir Zone	6	6	6	7	3	5	13	(4) Valley of Kashmir	3	3	0	0	3	3	3
5. Side Valley Zone (Wangat Nalla)	0	0	0	6	15	7	6	(5) Side Valley (Lidder Valley)	0	0	18	9	18	9	9
6. Side Valley to Summer Resorts	4	4	4	0	0	5	4	(6) Side Valley to Summer Resorts (A) East Lidder Valley Masitnar Chandanwari (B) Summer Pastures Zone Chandanwari to Sokhnalla	2	3	2	0	4	3	3
									4	7	0	2	4	9	9
TOTAL	24	25	23	42	47	44	66		29	31	34	3	63	65	65

TABLE 2

Showing the Characteristics and Number of Dhiyaras Taken in Each Topographic Zone During Spring Migration

Pir-Panjal Pass Route												Banihal Pass Route											
Topographic Zone	Dhiyara			Duration in Days			Total Journey in Hours			Paraos (No. of Hols)			Topographic Zone	Dhiyara			Duration in Days			Total Journey in Hours			
	1973	1974	1979	1973	1974	1979	1973	1974	1979	1973	1974	1979		1978	1979	1978	1979	1978	1979				
Winter Resorts to Intervening Pastures	1	1	1	7	7	6	28	28	29	0	0	0	Winter Resorts to Intervening Pastures	2	3	8	9	39	38				
Intervening Pastures (Rattan Pir Shah Range)	1	1	0	1	2	0	7	13	0	22	17	9	Intervening Pastures Ladha Dhar Range	4	1	8	9	31	63				
Pir-Panjal Zone A) Southern Slopes Chitta Pani Valley	3	3	5	6	6	7	41	37	38	7	12	28	Pir-Panjal Zone A) Banihal Valley B) Banihal Pass	2	*	4	*	31	*				
B) Northern Slopes (Ram-biera Valley)																							
Valley of Kashmir A) Sangerveini to Shalimar	3	3	3	6	6	6	45	46	43	7	3	5	Valley of Kashmir	2	1	3	3	29	23				
B) Shalimar to Khimer	0	0	0	0	0	0	0	0	0	6	15	7	Side Valleys (Liddar Valley)	0	0	0	0	0	0				
Side Valley (Wangat Nalla) Khimer to Wangat	1	1	3	4	4	4	15	15	19	—	—	5	Side Valleys to Summer pastures A) East Liddar Valley Masit-nar to Chandanwari	2	2	6	10	51	46				
Summer Resorts Wangat to Gadsar																							
B) Chandanwari to Sokhnalla																							
TOTAL	9	9	12	24	25	23	136	139	139	42	47	44		12	7	29	31	181	170				

The zonewise response of the marching group and the nature of movements during the spring migrations on two routes follows as under :

The zonewise response of the nature and characteristics of spring migration is interpreted on the basis of the migration graphs. These graphs reveal that the nature of response in different topographic zones is quite different from the overall picture. The data is consolidated in Table I and II, which reveal as under :

(i) *Winter Resorts to Intervening Pastures* (on Middle Mountain Ranges)

On Pir-Panjal Pass route, this zone was covered with one *dhiyara* of 6 to 7 days' continuous marches which took a total time of 28-39 hours in different years. The average length of journey was less than six hours per day which means short journeys. The rising, departure and packing timings are showing a tendency to rise and depart early.

In comparison to Pir Panjal Pass route, Banihal Pass route was covered by two *dhiyaras*. The first *dhiyara* began from the winter base and broke for one day just to take stock of the situation. This was a short *dhiyara* of three hours' duration. The other *dhiyara* was 5 to 7 days' duration with short and continuous marches less than five hours a day. The rising departure and packing timings reveal the same features as on Pir-Panjal Pass route.

Thus, the data explain that when they move from winter resorts to intervening pastures they march daily with short journeys with the purpose of utilizing the available natural vegetation on the slopes. But the continuous marches explain the reasons of this pattern of movement, that in this zone they avoid conflicts with the settled population and the fear of animal lifters causes tension in their minds. One of the important reasons observed during spring season was about the health of new born lambs, who were likely to fall ill due to rising temperatures in this season. So, they march daily to take these new born lambs to the cold places at intervening pastures as early as possible.

(ii) *Intervening Pastures* (Middle Mountain Ranges)

On Pir-Panjal route there was a *parao* (halt) for nine to eighteen days in various years at Rattan Pir Shah range for pasturage. The other reason observed for this exceptionally long stay was to wait for the opening of the Pir-Panjal Pass. The character of movements on the intervening pastures reflects a daily shift in the site of camping place for the purpose of grazing. The data concerning *dhiyara*, rising departure and arrival timings and the duration of journey hours indicate that this is a zone of comfort on the route of migration. The transhumants sell their animal products and purchase goods for household consumption from Thanna mandi. The salt is given to the animals in this zone.

On Banihal Pass route they spend 17 to 26 days in this zone at Ladhaddhar range. Out of these, 9 to 11 days were journey days and 6 to 17 were halt days. The number of *dhiyaras* observed were four, in different years but the data concerning rising and departure timings and duration of journey reveals a tendency to shift their camping sites for the purpose of grazing, moving in short marches slowly upwards the slopes. This pattern is because of the peculiar terrain and the distant location of the Ladhaddhar range between the winter resorts and the Banihal Pass.

The data on two routes reveal that the pattern of movements on Ladha-dhar range is slightly different from that of Rattan Pir Shah range. In case of the former, there is a shift of camping site many times but in case of the latter it is not so. The variation in patterns of movement on two routes in this zone is a direct function of the natural environment and locational situation between the Pir-Panjal Range Passes and winter resorts.

(iii) *Pir-Panjal Mountain Zone*

On Pir-Panjal Pass route, when the transhumants move through the Pir Panjal mountain zone, the data for various years reveal that it was covered in 18 to 25 days, whereas 7 to 8 are journey days and 11 to 17 are halt days. This zone was covered in three *dhiyaras*. The first was from the intervening pastures to Poshiana along Chitta-Pani Stream. The second

and become very weak. Sudden snowfall, hail-storm, rain, cold wind and flash-floods add to their miseries. It is further observed that these factors are of utmost importance and of major concern to the transhumants, apart from poisonous grass "*Ingo*" which causes death to the animals.

(iv) *Valley of Kashmir*

On Pir-Panjal Pass route, the Kashmir valley was covered in nine to thirteen days, out of which six were journey days and three to seven are halt days, in different years. The data reveal that this zone was crossed in two *dhiyaras*. The first *dhiyara* of three days duration with very long marches, was from Sangerveini to Shalimar and the other *dhiyara* was of one to two days' duration with short marches from Shalimar to Khimer and from Khimer to Woyil. The data concerning the time of awakening, departure, arrival and the length of journey, early rising, rapid packing, early departure and long marches reveal that this is not a favourable zone to the transhumants. They want to cross it as quickly as they can do. The reason for this tension is that this is the zone of Kashmiri peasants, and they are hostile to them. Just to avoid clashes with them they pass through this zone as hastily as then can. The *parao* at Shalimar (Srinagar) is made for rest after long marches and also for the purpose of shopping at Srinagar.

On Banihal Pass route this zone extends from Verinag to Aishmuqam. This zone was crossed in three days with very long day and night marches in one *dhiyara* and no halts. The data regarding the times of awakening, departure, arrival and length of marches reveal early rising, rapid packing and long marches which explains that they want to cross this zone as quickly as possible. The reason for this tension is similar in nature as observed on the Pir Panjal Pass route *i.e.* to avoid clashes with the hostile Kashmir peasants.

It is observed in case of both the routes that they bring their flocks over road side fields almost totally devoid of grazing, and push through in forced tracks of thrice the normal daily length. Conflict over damages to crops and theft of animals is usual in this zone. The villagers take advantage of the transhu-

ments' difficulty in keeping flock together in the valley of Kashmir by stealing stray animals. Some organized gangs have been reported indulging in this activity. Sometimes the transhumants took revenge by taking away the village animals with their flocks. Although some *Kafila* leaders have useful personal contacts in most of the villages traversed by them, yet the conflicts cannot be avoided and settled by them in this zone. So, they remain very tense in this zone, and therefore want to cross this zone as quickly as they can to avoid any clash with the Kashmiri peasants.

(v) *Side valleys*

The data on Pir-Panjal Pass route for different years reveal that they spent six to fifteen days in this zone. No journey days are observed in this zone. The data about times of awakening, departure and arrival reveal late rising, slow packing and short marches which explain comfort and relaxation. A long *parao* of six to fifteen days was made to perform sedentary activities either on their own fields or on the fields of their relatives. During this long stay, the animals graze on the slopes and the provisions are collected. On Banihal Pass route, a similar pattern was observed in this zone.

In case of both the routes it is observed that participation in agricultural activities dominate their stay in this zone and relaxation is observed.

(vi) *Side Valleys to Summer Pastures*

On Pir-Panjal Pass route this zone was covered in four to nine days, in different years. The data reveal one *dhiyara* of four days duration with short marches, late rising, late departure and early arrival which explains slow movements and a favourable zone for their flock.

On Banihal Pass route this zone was crossed in two stages by two *dhiyaras*. First was along the East Lidder Valley up to Chandanwari and the second was from Chandanwari to Sokhnalla through mountainous terrain covered with snow. The data concerning *dhiyara*, awakening, departure, arrival timings, length of marches reveal late rising, slow packing, late departure, early arrival and short marches, that they move leisurely while grazing their animals on these slopes to the summer pastures.

was from Poshiana to Dubjan (the Pir Panjal Pass was crossed by this *dhiyara*) and the third was from Dubjan to Sangerveini. The data concerning the times of awakening, departure, arrival and the length of journey reveal early rise, early departure and late arrival which explain that the tension persists in the minds of the transhumants, while they pass through this zone, particularly on the day, they cross the main Pir-Panjal Pass. The reasons for this tension are rains, galis, strong winds, rock avalanche and non-availability of grass which causes heavy loss of men and animals. To meet the daily exigencies in this zone they move in big groups for reasons of safety and mutual help. They generally do not halt in this zone, except in case of emergency. But the *parao* at Dubjan was made for rest after crossing the mountain pass, and the *paraos* at Gadar Maidan and Sangerveini were for the purpose of grazing and preparation for the next journey.

On Banihal Pass route, the data reveals that the journey on the south of Pir Panjal range from Ladha-dhar to Banihal Pass is very long which is on the National Highway. The timings of awakening, departure, arrival, the length of marches and the position of *dhiyaras* reveal early rising, early packing, continuous marches even at night, maximum tension in the minds of the transhumants while passing through the Banihal valley. They do not make any *parao* from Ramban to Shaitan-nalla (Banihal). The reasons for this tension are non-availability of grass, traffic congestion on the road and accidents. The loss of animals is the highest in this zone. From Shaitan-nalla they ascend to the Banihal Pass and descend at Mazmu-Munda after one day's halt. It is because the starved animals eat poisonous grass, "*Ingo*", which causes dysentery to the animals and results into death at Shaitan-nalla.

They stay at Mazmu-Munda for several days for grazing and rest. From there they descend to Verinag.

It was observed, that while the transhumants pass through the Pir-Panjal range zone, they face maximum hardship due to natural hazards at the Pir-Panjal Pass route but on the Banihal Pass route the difficulties are caused due to traffic congestion on National Highway. The flocks are being pushed through this zone in forced marches. They are under-nourished

It is observed that the difference in pattern of movements does exist on both the Banihal Pass route and Pir Panjal Pass route. The difference in movement pattern is due to topographic location of Side Valleys on the two routes. In case of the former the location of Side Valley is at a greater distance than the latter.

Conclusion

The data presented in the above pages explain, that in spite of the multitude of disturbing variables—such as the fact that the beasts of burden are not and have to be found every morning, or the event of feast or accidents or even births within the marching groups in spite of all this, some clear and regular features are revealed as under :

- (i) While crossing the-zone between the winter resorts and intervening pastures, in middle mountains during spring migrations they cross it in continuous and short marches for several days, making on *paraos* except night halts. This pattern of movement is due to the fact that sedentary population put resistance on their stay for a longer time.
- (ii) On the intervening pastures, they make a longer *parao* of several days, for grazing and utilization of natural pastures for flocks.
- (iii) When traversing through the Pir Panjal mountain zone they cross it in long marches, making only emergency halts. On the day of crossing the main mountain passes they start in the early hours of the day and cross it with a very long march. Many a times these marches are obstructed by natural and climatic factors like hailstorms, rains, snowfall, rock avalanches and scarcity of fodder.
- (iv) While the transhumants pass through the valley of Kashmir they cross it very quickly, making very few halts because of the hostile attitude of the Kashmiri peasants towards the transhumants. They do it to avoid clashes with them over fields and animals.

- (v) When the transhumants pass through the Side valley they stay for several days here for performing sedentary activities where they have their own fields as well as friends and relatives.
- (vi) While the transhumants move from Side valleys to their summer bases the marching groups drift more slowly moving and halting without any marked cyclical patterns, towards the summer resorts in which that particular group usually spends the summer.

Summing up the above discussion, it is observed that the pattern of seasonal movements, nature of daily marches and halts have a strong correlation with the seasonal land use for flock on the migration routes in this mountainous terrain of Jammu and Kashmir. The character of approach routes limit the outer parameters of the daily movements and halts of a transhumant during spring and autumn migrations. They stay for several days in those zones which provide most advantageous conditions to their flock. They avoid to stay for any appreciable time in those zones which are less favourable for their animals. The factors which influence the decisions during migrations as to when and where to move and to stop during migrations, depend upon the maximum utilization of available natural environment and the needs of the flocks. The complexity of the migration behaviour revealed by the migration graphs for different years make it evident that the flock movements were a response to many a different factors. They are not simple back and forth movements set by calendar. The length of the marches and *paraos* in different topographical zones are planned as to satisfy the basic needs of the flock, availability of the pastures, to avoid loss from natural hazards, clashes from sedentary population and performance of small grain farming on the migration channel.

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APPENDIX 1

Daily Report of Migration (Spring Year..... Route.....)

- (1) Serial No. of Halt.....
- (2) Date of Departure.....
- (3) Place of Departure.....
- (4) Height (above sea level).....
- (5) Starting time of striking the Tent.....
- (6) Starting time of Loading.....
- (7) Time of Departure of the first Household.....
- (8) Time of Departure of the Last Household.....
- (9) Place of rest in between the place of Departure and Arrival
- (10) Time taken in Rest.....
- (11) Time of arrival at new Site....
- (12) Total time taken in Travel.....
- (13) Intermediate distance.....

- (14) Total distance.....
- (15) Place of arrival.....
- (16) Height (above sea level).....
- (17) Economic Activities.....
- (18) Social and Religious Activities.....
- (19) Weather conditions on the day :
 - (Max.
 - (Min. (8.30 a.m).....
 - Temp. (Max. (5.30 p.m).....
 - (Min.
 - Pressure (8.30 a.m.....
 - (5.30 p. m.....
 - (Wind : Velocity.....
 - Direction.....
 - Other (Hail : Quantity.....
 - Phenomena
 - (Time.....
 - (Snowfall.....
 - (Clouds.....
 - (Rainfall.....
 - (Others.....
- (20) Description of the Nature of the
Route in between the places
of Departure and Arrival
- (21) Description of the Site and
Location of the place of Halt
- (22) Any other Event :—
 - (i) Death.....
 - (ii) Birth.....
 - (iii) Accident.....
 - (iv) Animal loss.....
 - (v) Feud.....
 - (vi) Checking by Govt.
authorities.....
 - (vii) Payment of tax.....
 - (viii) Any other.....

Seasonal Migration of Kashmiri Labour

HASEENA HASHIA*

IN recent years social geography has attracted the attention of geographers. Empirical work in social geography has, however, been inconsistent. This branch of geography deals with the identification of different regions of the earth's surface according to associations of social phenomena related to the total environment. Migration which means a change of residence across an administrative boundary is an important aspect of social geography. Migration may be permanent, seasonal or daily. It may be forced or voluntary. The simplest kind of movement can be related to man's reaction to physical environment.

The Valley of Kashmir provides enormous attraction for the tourists and intourists during summer but the cold winter create harsh conditions for the inhabitants, especially for the rural unskilled labourers. These labourers out of economic necessity and owing to physico-social factors travel very great distances to find work just to improve their lots and to create better milieu for their children. Seasonal migration of Kashmir labour is a peculiar phenomena. In the present paper an attempt

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has been made to study and to interpret the factors responsible for this seasonal migration.

In the Valley of Kashmir winters are generally severe which hamper the growth of vegetation and crops. Consequently, the able-bodied peasantry in Kashmir is left without work. Moreover, to combat with the severe winters, thick woollen clothing, bedding, fuel and good diet are required. By migrating to warmer areas within the country, the labourers not only find jobs, they also economise expenses on clothing, fuel wood and other fuels. Cold climate is a health hazard too for the people belonging to the lower strata of the society. They are exposed to common cold and cough leading at times to pneumonial and other bronchial disorders. In order to survive in the valley the jobless labourers have to borrow money and thus fall prey to local money lenders. In certain rural area of the valley custom of paying the bride-price is prevalent. The unmarried landless cultivators have to accumulate money in order to purchase jewellery, clothing etc. for their marriages and therefore the desire to get married persons works as a catalyst for seasonal migration. For married persons it is the marriage of the son or the daughter, that prompts them to seek new avenues of livelihood in otherwise slack or out of work season.

The desire to satisfy the basic urge in man to seek a change of environment is also partly responsible for the seasonal migration. The migrants present a rosy picture of their places of sojourn and give exaggerated accounts of their material gains to the young ones who stay at homes. In the latter the desire for travel and migration is tickled and they follow the footsteps of their elders. This breaks the monotony of their uneventful and routine life and they experience the variety in places and people and combine work with change. Honest, docile and God-fearing as they are, they make commitments with their employers for a return visit next season. It is this unending circle of making and honouring their commitments that draws them back to their chosen places, time and again. Thus the environmental and socio-economic factors force Kashmir labourers during the winter season in the hope of improving their lots and economic status.

The surveys have so far been carried out by the Directorate of Evaluation and Statistics in the year 1973-74 and 1975-76 regarding seasonal migration of Kashmir Labour Force. On the basis of these surveys it has been ascertained that about 33,705 and 36,474 labourers migrated in 1974 and 1976 respectively.

The river of labour force so to say is formed at Qazi-Gund* where a number of tributary streams migrating from different parts of the valley confluence. It moves over the National Highway to break up into distributories at Jammu.

Source Areas

The outgoing labour force from valley during winters originates from almost all parts of the valley. Their place of origin has been given in Table 1. An examination of Table 1 reveals that more than 95 percent of the migrating labour is drawn from the Anantnag district. To be precise it is Tehsil Kulgam which forms the major source. The proximity of the Anantnag area to the National Highway and the location of Qazi-Gund (the important bus station for the Jammu bound buses and trucks) are probably the encouraging factors.

TABLE 1
Source Area of Migratory Labour

S. No	District	1973-74		1975-76	
		No.	%age	No.	%age
1.	Anantnag	20,820	62	21,508	59
2.	Pulwama	4,683	14	7,015	19
3.	Kupwara	5,851	17	4,823	13
4.	Baramulla				
5.	Srinagar	2,351	7	3,128	9
6.	Badgam				
Total		33,705	100	36,474	100

*Quazi-Gund is the last bus-station for the outgoing people from the Valley. It is about 16 kms from the Banihal Tunnel.

To this large percentage of migrating labour may be added another 14% (1973-74) or 19% (1975-76) contributed by District Pulwama in general and Tehsil Shopiyan in particular. The total number of such migrating labour is the Tehsils of Shopiyan, Kulgam, Doru and Anantnag, comes to about 25,500 (1973-74) or 28,500 (1975-76). This can better be appreciated when compared with the total number of workers of the districts of Anantnag and Pulwama during the census of 1971 which is 2,47,000. About 10 percent of the working male population of these two districts of Anantnag and Pulwama leaves the valley in search of temporary gainful employment.

The Tehsils of Shopiyan, Kulgam, Doru and Anantnag lie at the foot of valley facing slopes of Pir-Panjal Range. It is not surprising to find these areas lying on the routes from Kashmir to western and central Punjab that crossed the important passes in this mountain range like the Banihal, Golabgarh, Sedau, and Pir-Panjal, seemingly, these areas happen to be the traditional sources of migrant labour from Kashmir.

The second significant source area is the present Kupwara district especially the Tehsils of Handwara and Kupwara with a total contribution of 17% (1973-74) or 19% (1975-76). This area lies in the north western Kashmir far away from the National Highway and involves an additional day of travel upto Srinagar before proceeding to Jammu. The compelling forces of migration here are the shortage of good agricultural land and also the inadequacy of employment opportunities in secondary and tertiary activities.

The other three districts—Baramulla, Srinagar and Badgam contributed only about 7 and 9 percent of the migrants in 1973-74 and 1975-76 respectively. The small share of these districts is mainly because most of the spare hands get engaged in household cottage industries, handicrafts and tourism.

It is interesting to note that the seasonal migrants do not migrate to one city, town or state. Their destinations are mainly in the different towns and cities of Punjab, Haryana, Himachal Pradesh, Uttar Pradesh, Delhi, Rajasthan, Gujarat, and Maharashtra. But in the distribution of labour the distance decay model applies which means that most of the labourers try to stay in Jammu. Going away from Jammu most of them

prefer to stay in Punjab and Haryana. This fact can be appreciated from Table 2.

Table 2 gives the details of the migrated labour from Kashmir and shows their destinations in the various states of our country. Most of the labour i.e., more than 42% stays in the sub-tropical parts of Jammu province. Out of this a major portion is absorbed in the Jammu city in construction work, wood-chopping and as casual labour. A small portion also goes to the districts of Udhampur, Poonch, Rajouri etc.

TABLE 2
Distribution of Migratory Labour—Occupation-wise

S. No	State	Casual labour	Wood chop- ping	Paddy Husk- ing/ Drying	Others	Total	%age to M. lab- our
		No.	No.	No.	No.	No.	
1.	Jammu Province	13566	1228	299	254	15347	42.07
2.	Punjab	7670	2324	2173	110	12277	33.6
3.	Haryana	587	278	1027	...	1892	5.2
4.	Himachal Pradesh	1119	663	92	20	1894	5.0
5.	Uttar Pradesh	1005	782	543	17	2347	6.4
6.	Delhi	1333	169	129	17	1648	4.5
7.	Rajasthan	14	53	12	...	79	0.2
8.	Gujarat	42	...	...	...	42	0.1
9.	Others	582	159	177	30	948	2.6

The next significant destination is the neighbouring state of Punjab. 33% of this migrating labour force finds work in the major cities of Punjab mainly in Amritsar, Pathankot, Jalandhar, Hoshiarpur, Ferozpur, Ludhiana, Patiala, Bhatinda, Batala etc.

Not many people visit the other neighbouring state of Himachal Pradesh. May be that this state has not much to offer to Kashmiri labour. Instead it is the people of Kargil

who migrate in large numbers to Himachal Pradesh. A total of only 5% of migrated labour goes to Himachal Pradesh. Here they are confined to Simla and Kangra districts.

Same number of these migrants stay in Haryana in the cities like Ambala, Karnal, Panipat, Uttar Pradesh absorbs about 6.4% of Kashmiri labour. Saharanpur, Nainital and Meerut are the main districts of their absorption. About 4.6% of Kashmiri labour goes to Delhi to spend their winters, while a small number goes to other states like Rajasthan and Gujarat.

This seasonal migration of Kashmiri labour will continue in future also, and the part-time jobs provided by the organisations connected with the Kashmir Handicrafts and Cottage Industries are too meagre to provide employment to the surplus labour. Therefore, adequate steps be taken at the Government level to provide the labour information about employment. Efforts should also be made to take care of their health, accommodation and wages so that their exploitation could be stopped and the purpose for which they leave their nears and dears is accomplished.

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Afghans of Gutlibagh (Kashmir) —An Anthropological Study

INDU BALA DHAR*

Historical Background of Land of Afghans

THE land of Afghans is traced to the Hindukush range of mountains. The mountainous range is 600 miles long with its main ridges as high as 15,000 to 20,000 feet and its subsidiary ridges extending to both north and south. Sir Kerr Fraser Tytler saw it as "a country of great peaks and deep valleys with precipitous gorges and rushing green rivers ; a barren beautiful country..." while Colonel Algernon Durand, who visited the area in 1888 for the first time felt that the Hindukush once seen in its most majestic aspects defies all comparison.

While Indus demarcates the cultural boundary and the Hindukush the physical, there lies a strip broadly known as 'tribal territory'. The strip starts from the Pamirs in the north running through Chitral Kohistan, Bajaur, Khyber, Tirah and Waziristan and includes Indus Plains, the dominant being the Sulaiman Range. This territory is also known as North-West Frontier Territory comprising some 40,000 sq. miles. This territory

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once belonged to Afghanistan and is still largely inhabited by the Pathans—the principal race of this region. The political frontier therefore does not constitute an ethnic boundary; though the Pathans inside Afghanistan are called Afghans but they are the part of the same race which prevails in NWF and is recognised as such.

With the advent of Mugal rule and later during the reign of Ahmad Shah Durani a large number of Afghans came to India and to Kashmir. Thereafter they continued to come in batches as and when internal feuds in their home lands unsettled them to other distant places apart. After the Mughal rule the Afghans came to power in Kashmir in 1752 and held it under their sway till 1818 during which some 32 subedars from Afghanistan ruled Kashmir. Naturally during this period migration of Afghans to Kashmir continued unabated and they settled in various parts of Kashmir especially in Beeru, Uri Handawara and Srinagar (South Western parts of the Kashmir Valley). Even when Sikhs drove out Afghans in 1818 and later when Maharaja Gulab Singh became the new ruler of Kashmir, the latter retained a number of Afghans in defence services, granting them lands and Jagirs besides employment.

Afghans of Gutlibagh first came to this colony about 150 years ago being attracted to the place because of green pastures and desirable climatic conditions. They mostly belonged to Yosufzai clan and have retained to-date most of their parental customs and continue to speak 'Pushto' their native language. This segment of Afghans is stated to have entered Kashmir via Baramulla, where they halted for quite a period of time. Thereafter they moved upwards in the north-west from south-east of Kashmir in search of more suitable green pastures and cultivable land. This search led them further firstly to Pattan and thereafter to Sumbal a place near Manasbal lake. At last they chose Gutlibagh a village near the left bank of Sind river which is about 28 kms north of Srinagar city as their final destination. Besides the Yusufzai clan people of other clans like Khan Khil and Swati also live in Gutlibagh but the present study is confined to Yusufzai clan only since it happens to be the most predominant clan among the immigrants.

Dermatoglyphics—Methodology

Bilateral Finger and Palmar prints of 200 Afghan adults (100 males and 100 females) were collected from the Yosufzai Afghans of Gutlibagh. The prints were taken by ink and pad method and evaluated according to Cumins and Midlo (1961), and Penrose (1968) Holt (1949) has been followed for the analysis of ridge counts. For the study of Palmar flexion crease namely Simian and Sydney, Plato (1975) and Bhanu (1973) have followed.

The data pertaining to finger and Palmar prints was subjected to a careful analysis for the various dermatoglyphic features. The male and female sample were treated separately to ascertain sexual dimorphism seen in dermatoglyphic characters.

1. *Finger Prints* : Following features of finger prints have been studied :

1. Different pattern types on the digits ;
2. Bilateral symmetry ;
3. Indices ;
4. Finger ridge counts.

Different Pattern types on the digits

It has been found that in male fingers whorls (including composites and accidentals) occur most frequently and constitute 49.4% of all the patterns found on both the hands of male Afghans. Ulnar loops constitute 43.1% of all the patterns present. Radial loops constitute only 2.3% whereas the arches constitute 5.2% the predominant pattern among females is the ulnar loop with a frequency of 49.1% whorls constitute 43.1% whereas the arches constitute 6.7% and radial loops with a minimum frequency of 1.1 percent.

Bilateral Symmetry

Bilateral symmetry on both hands of males and females is similar. The same pattern on homologous fingers of both hands occurs in 35.8% of males and 32.0% of females. It is highest on digit V and Lowest on digit I in both males and females.

Indices

Simple examination of the percentages of arches, whorls and loops was not considered sufficient and consequently certain indices were established for the more precise determination of the relationship among the various papillary lopes within each ethnic group.

The value of indices shows convincingly sex differences in the general distribution of pattern on the fingers of the two sexes. Female show a considerably greater value for Dankmeijer's index, whereas males show higher value for Furuhashi's index and pattern intensity index than the females. The fact is strongly suggestive that the patterns on the fingers have evolved to a greater extent in the females than in males. This fact, however, is only true if progressive simplification of the pattern type from whorl to arches is considered as an evolutionary trend in dermatoglyphics.

Finger ridge count : The mean ridge count in male Afghans is higher on digits I, II and IV and lower on III and V of the right hand than in the left hand which seems to be in keeping with the tendency for the patterns to be larger on the right than on the left hands. Bimanual differences are more for digits I, II and IV than on other digits. In females the mean ridge count is higher on I, II, III and IV and lower on V of the right hand than in the left hand. It is because of the tendency for the patterns to be larger on the right than on the left hands. Differences between left and right hands are, however, more on digits I and II than on other digits.

2. *Palmar prints* : Following features of Palmar prints have been studied.

1. Three principal main line formulae
2. Terminations of main lines D,C,B,A
3. Model type for D and A lines
4. Main line Index
5. Axial triradii
6. Maximal atd angle
7. Palmar configurations (pattern types on hypothenar and then areas and all inter digital areas)

8. Accessory briradii
9. a-b ridge count
10. Palmar creases.

Three Principal Main-line Formulae

The order of preponderance of three principal main-line formulae in Afghans is :

Males : $11.9.7 > 7.5.5 > 9.7.5$

Females : $11.9.7 > 7.5.5 > 9.7.5$

Terminations of main-lines D, C, B, A

The order of preponderance of D-line terminations :

Afghan males : $11 (59.5\%) > 9 (16.0\%) > 7 (13.0\%) > 10 (11.5\%)$

Afghan females : $11 (66.0\%) > 9 (14.0\%) > 7 (14.0\%) > 10 (5.5\%)$
 $> 12 (0.5\%)$

Terminations of main-line C

The preponderance order in 9.7.5" positions is :

Afghan males $9 (60.5\%) > 7 (17.5\%) > 5'' (10.0\%)$

Afghan females $9 (65.0\%) > 5'' (11.5\%) > 7'' (11.0\%)$

Termination of main-line B

The preponderance order in 5".5" and 7 positions is :

Males : $7 (54.0\%) > 5'' (28.0\%) > 5' (11.0\%)$

Females : $7 (61.0\%) > 5'' (18.0\%) > 5' (13.5\%)$

Termination of main-line A

The preponderance order in 5', 4, 3 and 1 positions is :

Males : $5' (48.0\%) > 3 (34.0\%) > 4 (13.5\%) > 1 (1.0\%)$

Females : $5' (45.5\%) > 3 (26.0\%) > 4 (22.0\%) > 1 (0.0\%)$

Modal Types

The preponderance order of D-line model types is :

Males : $11 (59.5\%) > 9 (27.5\%) > 7 (13.0\%)$

Females : $11(66.5\%) > 9(19.5\%) > 7(14.0\%)$

The preponderance order of A-line modal types is :

Males : $5(52.5\%) > 3(47.5\%) > 1(0.0\%)$

Females : $5(52.0\%) > 3(48.0\%) > 1(0.0\%)$

Main line index

In males as well as in females main-line Index is higher in the right than in left hands.

Axial Triradii

The preponderance order of types and combinations of axial triradii in male and female Afghans is :

Males : $t'(44.0\%) > t(35.0\%) > t''t'(6.5\%) > tt'(5.5\%) >$

$t''(4.0\%) > t't'(2.5\%) > tt''(1.5\%) > tt(0.5\%) = 0(0.5\%)$

Females : $t'(51.5\%) > t(30.0\%) > t''(7.0\%) > t't'(3.0\%) = t't'(3.0\%) > tt'(2.5\%) > tt(1.0\%) = tt'(1.0\%) = 0(1.0\%)$

Maximal atd angle

The range of atd angles for both the hands combined is from -30° to 70.1° in both the sexes. It is over 70.1° in males only. Slight but consistent differences are found between males and females. In females angles on the whole tend to be slightly greater than those of males. The mean atd angle for males in right hands is 42.7° and in the left hands is 43.3° . In females, the mean atd angle in the right hands is 43.1° and in the left hands is 43.7° . Total degree of bilateral symmetry in females (58.0%) is high than in males (55.0%).

Palmar Configurations

Hypothenar Patterns : The order of preponderance of open fields (0), arches (A) and true patterns (p) is :

Males : $A(60.5\%) > p(39.0\%) > 0(0.5\%)$

Females : $A(65.0\%) > p(34.0\%) > 0(1.0\%)$

(i) **Thenar Patterns** : The order of preponderance of open fields (0), arches (A) and true patterns (p) is :-

Males : $A(49.0\%) > 0(31.5\%) > p(19.5\%)$

Females : $A(45.0\%) > 0(37.5\%) > p(17.0\%)$

(ii) *Interdigital Patterns* : The order of preponderance (M) and true patterns (P) is :

Males : $0(68.0\%) > P(11.0\%) > M(15.0\%)$

Females : $M(56.0\%) > 0(24.0\%) > p(20.0\%)$

(iii) *Interdigital Patterns* : The order of preponderance of open fields (0) and true patterns (p) in Afghans is :

Males : $P(51.0\%) > 0(49.0\%)$

Females : $P(65.0\%) > 0(35.0\%)$

(iv) *Interdigital Patterns* : The order of preponderance of open fields (O), multiplication (M) and true patterns (p) in Afghans is :

Males : $P(51.0\%) > M(45.5\%) > 0(3.5\%)$

Females : $P(57.0\%) > M(37.0\%) > 0(6.0\%)$

Accessory Triradii

The order of preponderance of frequencies of accessory triradii in the Palmar area of Afghans is :

Males : $IV(20\%) > II(9.0\%) > Hypothenar(3.5\%) > III(1.5\%)$

Females : $IV(27.5\%) \geq II(7.0\%) > Hypothenar(5.0\%) \geq III(0.0\%)$

Palmar Creases

Among Afghans the complete Simian line is found (4.0%) in both the hands of males and (3.5%) of females. The complete Sydney line occurs more in right hands than in left hands in both the sexes. Considerable bilateral variation is discerned in the appearance of Simian and Sydney crease types in the hands. It is seen that the bilateral variation is more pronounced in the case of complete. Aberrant type appears more frequently-bilaterally considering bilateral symmetry and asymmetry in crease types. It is seen that the frequency of asymmetry is more than symmetry in females than males.

a-b Ridge count : The mean value of a-b ridge count is higher in both the hands of males than that of females. In the left hands, the mean value of b-d ridge count is higher than that of right hands in both the sexes.

Conclusion

From above analysis it is found that the frequencies of various pattern types in Afghans of Gutlibagh of whorls Kashmir that and ulnar loops are by far the most frequent patterns in both males and females. In this respect this population reveals a pattern of distribution somewhat similar to that observed in Ladakhis Kashmir-Pandits, Lahulies and Tibetans. The incidences of arches is low in all the populations when compared with these Afghans *i.e.*, it rarely exceeding 8% of all the pattern types. It is apparent from an examination of three columns of indicial values that they give no consistent impression of dermatoglyphic affinities. Thus if Dankmajer's index (100 A/W) is used, Kazan, Tatars, Rajputs, Parsis appear to be very close to Afghans. Female Kashmir-Pandits and female Parsis appearing to be more closely to female Afghans than female Ladakhis. If the index Furuhashi (100 W/L) is used, however, male Kashmir Pandits Lahulies appearing to be more closely to male Afghans. Male Ladakhis and male Tibetans show higher value than male Afghans. Female Tibetans show slightly higher value than female Afghans and female Ladakhis show lowest value. If the pattern intensity index is used Kashmir Pandits show similar value as Afghans and Ladakhis and Tibetans lie more closely to Afghans.

An examination of the value of the mean square distance suggest that Afghan affinities in so far they are reflected by dermatoglyphics, appear much closer to Kashmir Pandits and Lahulies Female Afghans are closer to female Tibetans.

The present study reveals that in Afghans 11.9.7 formulae is the most frequent and 9.7.5 occurs with lowest frequency. The variation in main line formulae in other populations reveals some interesting information. Almost all of them are similar in so far as they show a higher frequency of 11.9.7 which ranges between 23.9% to 52.5% except in both male and female Tibetans which have low frequency of 11.9.7 and high frequency of 7.5.5. The formulae of 11.9.7 of Kashmir Pandits is much closer to Afghans. But the frequency of 7.5.5 is higher in Afghans than 9.7.5. and almost all of them have higher frequency of 7.5.5 than 9.5.5. except Kashmir Pandits have higher frequency of 9.7.5 and 7.5.5.

The subject of the presents study belongs to Yusufzai the principal population of eastern Afghans. In terms of finger and palmar dermatoglyphic features these Afghan migrants to the Kashmir valley are characterised by a higher frequency of whorls (male : 49.4%,) (females : 43.1%) and ulnar loops (males: 43.1%, females 49.1%) and a lower frequencies of radial loops, (males : 2.3%, females : 1.1%) and arches (males 5.2%, females 6.7%); a higher frequency of 11.9.7 (males : 46.0%female 52.0%) and a low frequency of 7.5.5 and 9.7.5. (males 10.0%, females : 7.5%) and relatively lower frequencies of true patterns in the hypothnar, thenar/I and interdigital II areas and relatively higher frequencies of true patterns in interdigital areas III and IV in both sexes. A comparison of dermatoglyphic features of the Yusufzai Afghans and other populations of the neighbourhood and north western India show predominant Mediterranean affinities. A corroboration of this position is also provided by anthropometric, somatoscopic and other genetic observations, (Guha 1938, Coon 1939 and Bowles, 1977).

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Scheduled Castes in Jammu Division—A Study in Spatial Distribution

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NUMERICALLY speaking, in the population of Jammu Division, scheduled castes constitute an significant social group. The spatial distribution, concentration and ramification of scheduled castes provide some clues about the social structure of other groups with which they interact. The understanding of the nature and extent of these interactions in their socio-economic attributes become easy if an indepth study is made with the help of spatial variation approach—generally used by geographers

Scheduled castes form an integral part of group interaction system and social reality of a society, occupying a space or territory. Thus, the question of whether and in what measure the scheduled castes function as an autonomous social group in the interacting system of all other social groups in a particular ecosystem can be answered to some extent through the understanding of their geographical milieu and distributional pattern.

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Each social group, from the facts of their distribution generally, acquires two attributes *i.e.* autonomy and interactions, and have partaken of the socio-economic attributes of the region. Since scheduled castes form an important social group in the area of study and hence indicate the extent to which other social groups are deriving benefits out of their services, it also provides some clues to the constraints acting in the sharing of social amenities and the level of socio-economic development of the region. The disparities in the levels of socio-economic attributes of the scheduled castes and of the region indicating the process of interactions, flow and acceptance can be considered as contingent upon their distributional pattern. In the present study an attempt has been made to delineate the core areas of heavy concentration of scheduled castes in the region and the areas having sparse distribution of people engaged in servile economic activities.

Scheduled castes belong to a functional caste group. They are associated with the traditional occupation of cleaning, dyeing, tanning of cattle skins and hides, making of leather goods, foot-wears, iron-smelting, brick-making, charcoal burning and sweeping. Many of them are busy in ancillary services and helping the cultivators in raising crops. In the State of Jammu and Kashmir thirteen groups recognized as scheduled castes are : (1) Barwala (2) Basith (3) Batwal (4) Chamar (Ramdasia) (5) Chuhra (6) Dhyar (7) Doom (Mahasa) (8) Gardi (9) Jolaha (10) Megh (Kabirpanthi) (11) Ratal (12) Saryara and (13) Watal.

The Meghs is the predominant scheduled caste in the Jammu Division, which constitute about 53 percent of the total scheduled castes population. Chamars stand second while the Doods occupy the third rank. The remaining groups of scheduled castes occupy comparatively insignificant proportion of the total scheduled caste population. In Jammu division except for very small number of scheduled caste Sikhs who mostly belong to Basith, Chamar and Megh castes all other are Hindus by faith. A striking feature of the scheduled castes in the area is that many of them profess Christianity or Islam, yet they are treated as untouchables most probably because of their menial occupation.

According to the census of 1981, out of the total population of 5,98,7389 of the Jammu and Kashmir State the number of scheduled castes was 497,363 or 8.30 percent of the state population which is fairly below the national average (15.75%). This is because the state is dominated by the Muslims who do not have scheduled castes in their religion. It is however, interesting to note that 99.88 percent of the total scheduled caste population of the state is concentrated in the Jammu Division in which Hindu-population outnumbers Muslims. In the Kashmir and Ladakh Divisions the total number of scheduled castes is only 291 and 297 respectively. In Jammu division, which has a total population of 2,718,113 persons contains 496,773 people of scheduled castes. This is 18.27 percent of the total population and is thus slightly above the national average. Within the Division there are, however, glaring, spatial variations in their absolute numbers, ranging from a mere 84 persons in Mendhar Tahsil (Punch Distt) to 98,163 persons in Jammu tahsil. Similarly, their percentage in the total population varies from 0.06 in Mendhar tahsil (Punch Distt) to 39.18 in Bishna tahsil (Jammu District) Table 1.

Since a simple proportion of scheduled castes to total population of tahsil is related to the local picture only and do not reveal anything about its picture in the entire region. Therefore, the location quotient technique which gives us the relative picture of such proportion has been worked out for each tahsil and the resultant patterns have been plotted in (Fig. 1). The formula can be expressed as :

$$LQ = \frac{t}{T} \div \frac{d}{D}$$

when LQ = Location Quotient ;

t = Scheduled caste population of the tahsil ;

T = Total population of the Tahsil ;

d = Scheduled caste population of the division ;

D = Total population of the Division.

TABLE 1

Scheduled Castes in Jammu Division

<i>Tahsils</i>	<i>Total Population</i>	<i>Scheduled Caste population</i>	<i>Percentage of Scheduled Caste population to total population</i>	<i>Location Quotient</i>
Bishna	68,376	26,793	39.18	2.144
Ranbir- singhpura	138,913	52,752	37.97	2.077
Samba	159,027	49,202	30.93	1.692
Ramnagar	112,331	33,547	29.86	1.63
Kathua	115,184	34,151	29.64	1.622
Nowshera	41,845	11,924	28.49	1.559
Akhnoor	146,802	40,597	27.65	1.513
Jammu	430,277	98,163	22.81	1.248
Hiranagar	113,857	25,867	22.71	1.243
Chineni	30,166	6,694	22.19	1.214
Billawar	77,500	15,408	19.88	1.087
Udhampur	138,244	27,247	19.70	1.07
Riasi	80,991	13,801	17.04	0.932
Basholi	62,582	8,882	14.19	0.776
Bhaderwah	102,626	14,033	13.67	0.748
Doda	94,717	10,803	11.40	0.624
Sunderbani	31,864	3,525	11.06	0.605
Kalakote	36,894	3,053	8.27	0.452
Kishtwar	118,661	6,753	5.69	0.311
Ramban	109,258	5,524	5.05	0.276
Gool	91,904	3,767	4.09	0.224
Rajauri	136,177	3,434	2.52	0.137
Budhal	55,720	583	1.04	0.057
Haveli	95,999	125	0.13	0.007
Mendhar	128,198	84	0.06	0.003

Source : Census of India 1981, Jammu & Kashmir, Paper 2 of 1981
final population & Scheduled Caste population totals.

Obviously, the quotients so obtained will be either equal to one or more than one or less than one. If for a tahsil the quotient exceeds 1.00 it means that the tahsil accounts for a share greater than it would have had if the distribution were uniform in the entire region, and therefore, the component areal unit has a concentration of great significance. A quotient equal to one signifies that the tahsil for which it is obtained has its normal share and a quotient of under 1.00 indicates that it has less than its share, therefore, of less significance. It may be discerned from (Fig. 1) that the scheduled caste concentration varies from mountainous and hilly tracts to plain areas. The location quotients are fairly below 1.0 in the Pir-Panjal Region (Lesser Himalayas) whereas this value is only 0.003 (Haveli Tahsil) and 0.007 (Mendhar tahsil). In the hilly tracts of the north in which the population is predominantly Muslim, the distribution of scheduled castes is insignificant. There is a contiguous belt of thirteen tahsils, stretching from Haveli in the north-west to Basholi in the south-east in which the location quotient value is below 1, indicating an insignificant concentration of scheduled castes. Other tahsils included in this belt are Mendhar, Rajauri, Sunderbani, Budhal, Kalakote, Ridsi, Gool, Ramban, Doda, Kishtwar and Bhaderwah. In this region the proportion of scheduled castes in the total population is less than 18 percent which is less than the average of the Division. The fact that the absolute numbers, the proportions and the location quotient value of the scheduled caste population in the total population in this region are small. Another contiguous belt stretching from south-west to south-east from Nowshera to Kathua Tahsil, running almost parallel to the first belt, has a location quotient value more than 1, thereby indicating a medium concentration of scheduled castes. Ten tahsils namely Nowshera Akhnoor, Jammu, Chineni, Udhampur, Ramnagar, Billawar, Samba, Harinagar and Kathua fall in this belt, which covers almost the foot-hills terrain and the Siwalik Hills. In terms of percentage, scheduled caste population varies from 19.7 to about 31 percent in these tahsils. The south-west corner of Jammu Division has the highest concentration of scheduled castes. This area sprawling over two tahsils of Bishna and Ranbirsinghpura, the location quotient value is over 2. The percentage of scheduled

castes in Bishna and Ranbirsinghpura is 39.18 and 37.9 respectively. These two tahsils, thus have the highest concentration of the scheduled castes and can be termed as the hard core of scheduled castes not only in the Jammu Division but in the whole state of Jammu and Kashmir. The spatial distribution of scheduled castes in the region reveals that going away from the south-west corner their percentage in total population and concentration decreases towards north and east-wards.

So far as the rural urban continuum is concerned, scheduled castes are overwhelmingly rural in residential character with 439,627 persons or 88.49 percent of the total scheduled castes being residing in the villages. As compared to the average rural population of the Division which is 84.67 percent their proportion is fairly high. Their major concentration in the rural areas can be attributed to two facts : firstly, in general the population of the Jammu division is overwhelmingly rural. Secondly the scheduled castes belong to the landless labour category who are traditionally attached to soil and assisting the farmers in the cultivation of crops. The agricultural workers known as Shudras in the 'Varanashram' system of the Hindu religion, have been associated with the inferior jobs. Ploughing and sowing of crops by the upper castes like Brahmins and Rajputs was known ignominious and below dignity. Besides agriculture, they are also represented in tertiary activities, household industry and the traditional activities associated with leather, skin, weaving, sweeping, cleaning all of which are mainly ancillary to the rural primary population. The scheduled castes in residential character are thus overwhelmingly rural, so much so in two component areal units i.e. Chinani and Haveli tahsils they are exclusively rural in character.

There is a marked variation in the spatial distribution of rural and urban scheduled caste population. For example, the tahsil of Jammu alone has more than 43.7 percent of the total urban scheduled caste population. Interestingly enough, the scheduled castes are found in all the urban areas of the Jammu Division and the number ranges from 4 persons in tahsil Haveli (Punch distt) in the north-west to 25,064 persons in tahsil Jammu in the south-west. Similarly, their high percentage is in Jammu district (53.84) and the lowest in Poonch

district (0.04 percent). A high concentration of scheduled castes in Jammu tahsil needs further investigation, but most probably better job opportunities in the city is the main cause of their concentration in Jammu. In fact, besides doing government service, and menial jobs in the Municipal Corporation of the winter capital of the State there are ample opportunities of self-employment of shoe repairs, shoe-shining, shoe-making weaving, manufacturing etc. In Jammu tahsil the large concentration of the scheduled caste population in the urban areas is related to their heavy representation in household and manufacturing industry. A fairly large proportion of the urban scheduled caste population is concentrated in Jammu city itself and is engaged mostly in the manufacturing of leather goods. The culturally inherited skill in leather working has thus, been transferred to more sophisticated leather making activity in the city where it has greatly improved upon. For similar reasons a greater number of scheduled caste population is concentrated in the urban area of Kathua.

In the Siwalik and Pir-Panjal regions the strength of urban scheduled caste population is significantly low. The insignificant population of scheduled castes in this belt also mostly engaged in their traditional occupations.

Conceptually speaking, the distribution and the relative proportion of the scheduled castes as a socio-geographical fact must be viewed in terms of the functional inter-relationship among the different castes. The scheduled castes, traditionally have been the landless workers. Due to this fact it can be hypothesised that in those areas where farming is labour intensive or where the land-owner do not cultivate the land themselves either because of feeling it derogatory to their honour to till land by their own hands or due to attachment in secondary and tertiary activities but depend on agricultural labourers, there should be concentration of the landless castes. Since most of the castes constitute the scheduled castes and among them the majority is of Meghs, Chamars and Dooms, who work as landless workers. In southern parts of Jammu Division, the farming is labour-intensive, because the area is mostly inhabited by Dogra Rajputs who feel it below their dignity to till the land with their own hands, therefore, they depend upon landless.

labourers. It is because of this fact that there is a high concentration of the scheduled castes in the southern parts of the division.

Another explanation regarding their high concentration in southern parts is that farming forms the core of economy in the plains and becomes a part of diversified economy in the hilly and mountainous tracts, and since the scheduled castes are mainly related to farming, it follows that their major concentration should lie in the plains. Ecologically speaking, the scheduled castes are the people of the plains. Further more, the less developed northern tahsils are inhabited by the Muslim majority, who are educationally backward and, therefore, are mainly engaged in primary activities like farming etc. thereby requiring no tenant labourers. The high concentration of the scheduled castes is also expected in those areas where cattle play an important role either in the agricultural economy or in other non-farming primary produces. It is because, different groups of scheduled castes combine agriculture with their traditional occupations. This suggests that the scheduled castes form an integral part of both the general and rural population. It is important to point out that the traditional occupations of the scheduled castes carry a low prestige and they have the status of untouchables in the Hindu society. However, the levelling influence of modern civilization and education is engendering a spirit of greater tolerance and fellow feeling towards these useful members of the society. And the efforts of the state government on the one hand and those of the Arya Samaj and Sangh-Sabhas and other social religious and political societies on the other in reclaiming their respective folds have paved the way for a steady improvement in their economic and social status. However, the scheduled castes of southern belt of the Jammu Division like general population, are comparatively developed than their brethren in the northern parts. The disparities exist not only between the scheduled castes of different regions but also between them and higher castes whom they serve in different areas and even among various groups of scheduled castes. The roots of caste prejudices and taboos are to be sought in these economic realities.

There is a widespread and constant belief that the scheduled caste population in general and its constituent castes have a higher growth rate than that of the general population of which they form an integral part. This belief is not always substantiated by facts. While the general population of Jammu Division registered an increase of 30.93 percent, the scheduled castes population grew by 30.39 percent during the previous decade. The scheduled castes of Jammu Division in 1971 numbered 3,80,982 persons forming about 18.35 percent of the total population of the Division while in 1981 the number increased to 4,96,773 but the percentage decreased by 0.08 percent. Though this difference is insignificant yet it has a social meaning in terms of the public facilities available to the scheduled castes.

The study in the spatial variation of scheduled castes in the Jammu Division of Jammu and Kashmir state reveals that scheduled castes are overwhelmingly confined in the Jammu Division. Their distribution within the division is also highly uneven. In Bishna and Ranbir-Singh Pora tahsils they constitute upto 39.18 and 37.97 percent of the total population while in Mendhar they are almost absent. A similar picture emerges when their concentration is studied in terms of rural and urban population. Their over-all percentage in rural population is 88.49 percent as against 79.6 percent of the rural population in the state. Their growth rate shows an increasing trend mainly during the post-independence period. Efforts need to be made to install and provide more social amenities in the areas where their concentration is high. The better health of scheduled castes will not only be an asset to their families but will also be of great value to the higher castes who are being served by them in the form of ancillary services.

Hanjis of Dal Lake : Origin and Demographic Characteristics

ANGELI MAM*

IN recent years geographers have been increasingly concentrating on the study of micro-landscapes with an approach of 'cultural determinism' to ascertain the origin, ethnic characteristics, spatial spread, technical skills and level of development of social groups. The present paper is an exploratory attempt to study a human group (Hanjis of Dal Lake) as a spatial entity. The work is based on the secondary sources and the data generated by the authoress in the form of structured questionnaire. Among the diverse geographical phenomena, one of the most striking features of the Kashmir valley is Hanji habitation. Hanjis are essentially the dwellers of water, living in boats of various shapes, sizes and types in and around the different water bodies. Hanjis are well scattered in the different parts of the Valley especially along the banks of lakes and rivers. Their major concentration is, however, found in the navigable course of the Jhelum River in the Srinagar city. Besides the city of Srinagar, the concentration of boats and

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boatfolk is significant near Bijbehara, Khanabal, Avantipora, Pampore, Shalateing, Shadipur, Sumbal, Sopore and Baramulla. Apart from the banks of Jhelum, Hanjis live in Wular, Anchar, Dal Lake and the localities like the Chinar-Bagh, Kralyar and Naopora in the vicinity of Dal Lake.

Origin of Hanjis

There is lack of unanimity among the sociologists and anthropologists about the origin and spread of Hanjis in the Valley of Kashmir. The concept of *Nav* (Boat) in Kashmir seems to be as old as the valley itself. According to the belief of primitive people living here, both the movable and immovable creation were destroyed at the end of *Manvantra** and the whole world changed into a sea with water alone a form of Shiva himself existing all around. Then appears Sati (goddess Laxmi) in the form of *Nav* (Boat) in which the future *Manu* (Man) places all the seeds. One can find shades of similarity in the concept of Nilmata and his *Noah and his Ark* (Noah's refuge boat). Keeping in view the geography of Kashmir and its impact on the life and culture of the people, such observations and beliefs are but natural. The presence of some type of boat was essential for the survival of the people living here in the ancient times when no wheeled or mechanized transport existed.

The archaeological findings at *Burzahom*** (place near Srinagar) reveal some important facts about the people living in the valley of Kashmir in about 2500 B.C. These people were pitdwellers and used to live near lakes and rivers. The anthropological study of bones and skeleton found at Burzahom

**Manvantra* is a measure of time. According to "Nilmatapuran", the life on earth at present is passing through 7th *Manvantra*. After the completion of each *Manvantra*, all the movable and immovable creations destroyed completely. Then after the destruction of this world, Lord 'Shiva' himself in the form of water covered the entire world. The region named Kashmir was not inhabited in the last six *Manvantras*. It is in the 7th *Manvantra*, the water of the lake got drained off and the beautiful valley was inhabited.

**Burzahom is a place of archaeological importance. It is situated to the north-east of Srinagar in the district of Srinagar.

reveal that there existed much similarity and affinity between the Neolithic people of Harappa and Burzahom.

In the ancient literature *Hanz* (Hanjis) of Kashmir has been identified as the 'Nishada'. The well known historian Kalhana calls them by the same name in his monumental work—*Rajatarangni*. Sir Aurel Stein, the learned scholar and translator of Kalhana's *Rajatarangni* writes, "The term Nishada is generally applied to the aboriginal tribes living by hunting and fishing.....Fishing plays a great part in the Hanjis livelihood."¹

Linguists also trace the origin of Kashmiri word *Hanz* to the same Sanskrit word 'Nishada'. In Kashmir language 'Sh' (ष) of Sanskrit changes into 'Ha' (ह) and Da (द) into Za (ज). Shus Nishad (निषाद) becomes *Hanz* in the Kashmiri language.

There are also several other theories prevalent about the origin of Hanjis. Some scholars are of the opinion that the *Hanz* of Kashmir are basically of Sinhalese descent because a good number of boatmen are brought here from "Sangaldip". (Ceylon or Sri Lanka) by a Kashmir king, probably Pravarsena II (112-172 A.D.). The purpose of migration was to provide easy transportation and communication facilities to the people by introducing water transportation. Pravarsena II is the king who laid the foundation of present Srinagar city. The view point expressed by some others is that Hanjis are in fact of gipsy origin.² The gipsy nature is still reflected in their movement from one place to another in the lakes, streams and river Jhelum in order to earn their livelihood.

Sir Walter R. Lawrence sums up all the theories regarding the origin of Hanjis in the following words ³:

"It is impossible to obtain any information as to their origin, but the profession is very ancient and history affirms that Raja Parbatsen introduced boatmen from Sangaldip. They were of the 'Vaisya' caste.....when questioned, the Hanjis claim Noah as their ancestor but one account given to me by some representative Hanji rather point to a gipsy origin"

No king by the name of Raja Parbatsen ever ruled Kashmir. However, two kings by the name of Pravarsena I and Pravarsena II ruled Kashmir and of these the contribution of latter is well

known. Mohd-ud-din Fauq.....the author of *Tarikh-e-Aqwame* while discussing these opinions mentions Pravarsena instead of Prabatsen. His observations are that the *Malahas* (Boatfolk) or paddling of boats did not exist in Kashmir before the reign of Pravarsena II.

From the analysis of the origin of Hanjis, one can safely arrive at the conclusion that originally the boat owes its existence to the occupations like fishing and hunting practised by the earlier inhabitants of Kashmir. They are an admixture of many races and tribes which settled in Kashmir in different periods of history. In the beginning the form of boat might have been just a log of wood which slowly and steadily after sometime acquired a proper shape. As the time passed on, new avenues for earning livelihood were discovered and the shape, size and type of boats also changed according to the requirement of various activities. Boats of different types, shapes and sizes which are being used in Kashmir form the ancient times like *Bahatch*, *Khoch*, *Demba-Nav*, *Kara-Nav*, *War*, *Tchakawar*, *Parinda*, Houseboat etc. The type of boat which a Hanji owns and uses for earning his livelihood or the product he deals with to a great extent denotes the class to which he belongs.

The Dal take, situated to the east and North-east of Srinagar city, falls in the Srinagar Tehsil. The Dal and its surroundings are gifted with an unparallel scenic beauty. 'Perhaps in the whole world there is no corner so pleasant as the Dal lake', writes Lawrence. The lake is surrounded on all sides except the south by the slopes of high mountains which ranges from 900 to 1200 metres above the level of the lake. At the foot of these mountains on the edge of the lake area, spread various villages including orchards and famous Mughal gardens. The peak of Mahadev (3904 metres) to the north-east of Srinagar is overlooking the lake. The beautiful semi-circular road Boulevard, constructed by Dogra ruler Hari Singh (1925-1947) starting from the Dalgate, passes through the Gagribal and goes along the lake. The water of the lake is discharged through the Dalgate in *Tsunthi-nal* (Apple canal) and also through Nallah Amir Khan, from where it goes towards Anchar lake. Eighty

percent of water in the lake comes from Telbal Nallah which drains the large Dachigam valley. Several small streams around the shore line and springs under the lake bed also feed the lake.

Out of 19.6 sq. km⁴ area of Dal lake, 7.9 sq. km comprises of agricultural land. Vegetables are mostly grown in the floating gardens. Willow or poplar trees are planted along the edges of the marshy lands. The vegetation in the open water comprises of wild products like *hil* (weeds), *paetch* (reeds), *pamposh* (Lotus), lily, *nadru* (Lotus roots), *pambach* (Lotus fruit), *bumb* (water lily), *Kenibabi* (Duck potatoes), *Juwar* (Eurayale- ferox) etc. The open water is also best known for various types of fauna. Of these *Dal Gad* (Fish of the Dal lake) is known for its taste. According to an estimate done in 1981, about 1,660,40 people live in and around the Dal lake.

Demographic Characteristics

Demography is the quantitative study of population patterns in terms of size, composition and spatial distribution. Very little work has been done so far to collect data about the various demographic aspects of Hanjis. Therefore, till todate, nothing reliable is available in the written form about their birth and death rates, age and sex distribution, migration, literacy and other allied aspects. Even the data about their total population has not been gathered in the last four decades. However, it is mainly believed that the total population of Hanjis at present is about two to three lakhs. The authoress gathered information in the form of questionnaire, about the demographic profile of the Hanji living in the different parts of the Dal lake.

Age and Sex Distribution

The role of an individual in a family or a society is deeply associated with the age and sex. It is, therefore, natural that these form the important threads of demographic pattern or texture of a region, caste or class of people. They are visible, indisputable and convenient indicators of social status and

labour force. The survey undertaken for the study reveals that in 120 household there were 835 persons. About half of the total Hanji population is either in the juvenile or in the senile age groups which show a high dependency ratio. The age structure of Hanjis of Dal lake has been given in Table 1 :

TABLE 1
Dal Hanjis in Various Age-Groups 1983

Age Groups (in years)	Percentage-wise		Total
	Males	Females	
0-4	13.9	12.6	13.3
5-14	29.7	30.9	30.2
15-24	19.9	17.7	18.9
25-34	12.3	12.6	12.5
35-44	10.2	12.6	11.2
45-54	7.1	6.9	7.1
54+	6.9	6.7	6.8
Total	100.00	100.00	100.00

Table 1 reveals that the percentage of children (0-14 years) is about 43.5% of the total population. Only about 6.8 percent of the total population is of those whose age is more than 54 years. The reason being that with the old age, the deaths are more frequent. The remaining 49.7 percent of population is of those whose age is between 14 to 59 years. It is also clear that as the age goes on increasing, the size of population decreases. There is also a continuous decrease in population from 15 to 39 years (Table 1) in which a large number of reproductive females and workers (especially males) exist. This may be due to poverty, lack of proper care, poor diet and tensions resulting out of hard life.

The areal distribution of age and sex composition is given in Table 2.

In the age group of 0-14 the high male concentration is at Mir-Mohalla, Kankati, Nishat, Ishbar and Chach-Mohalla ranging from 13 to 25% and the lowest is at Hazratbal and Shalimar being only 4.7 per cent and 4.9 percent

TABLE 2
Spatial Distribution of age and sex of Hanjris in Dal Lake—1983

Locality	Age groups (Percentage-wise)													
	0-4		5-14		15-24		25-34		35-44		45-54		54+	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1. Gagribal	11.8	5.8	23.5	28.8	25.0	21.2	14.7	17.3	10.3	11.5	5.9	9.6	8.8	5.8
2. Mir Mohalla	13.7	16.7	31.8	8.3	27.3	16.7	4.5	25.0	13.7	16.7	4.5	8.3	4.5	8.3
3. Pir Bagh	8.3	18.2	33.3	18.2	16.7	27.2	16.7	18.2	16.7	9.1	8.3	9.1	—	—
4. Sheikh Mohalla	26.0	5.9	24.0	47.1	20.0	17.6	16.0	16.6	4.0	5.9	4.0	5.9	12.0	—
5. Hazratbal	4.9	11.3	24.4	32.1	24.6	24.5	9.9	3.8	11.5	16.9	13.1	5.7	1.6	5.7
6. Kankati	24.2	5.3	24.2	26.3	24.2	26.3	9.1	10.5	6.1	15.8	3.1	10.5	9.1	5.3
7. Shalimar	4.7	9.6	28.6	42.8	19.0	4.8	4.8	9.5	14.3	19.0	14.3	4.8	14.3	9.5
8. Nisbat	23.1	16.7	30.7	25.0	23.1	16.7	7.7	8.3	7.7	25.0	7.7	8.3	—	—
9. Ishbar	18.7	21.6	37.2	29.8	9.3	13.5	16.3	16.2	6.9	5.4	6.9	2.7	4.7	10.8
10. Bar Mohalla	7.7	10.0	30.8	36.7	25.7	6.7	15.4	16.7	10.2	16.7	5.1	10.0	5.1	3.2
11. Chacha Mohalla	23.5	5.0	35.3	35.0	11.8	15.0	11.8	15.0	5.9	20.0	8.8	5.0	2.9	5.0
12. Kohankhan	23.5	10.0	29.4	30.0	11.8	10.0	17.6	20.0	5.9	10.0	5.9	10.0	5.9	10.0
13. Khan Mohalla	20.0	11.8	28.0	23.5	20.0	17.6	12.0	17.6	12.0	11.8	4.0	5.9	4.8	10.8
14. Kralyar	5.3	20.8	26.3	41.7	15.8	16.7	10.5	—	15.8	8.3	10.5	4.2	15.8	8.3
15. Bala Mohalla	11.8	11.1	29.4	10.0	11.8	30.0	17.6	10.0	11.8	5.0	5.8	5.0	11.8	10.0
16. Gadi Mohalla	7.7	11.1	23.1	38.9	15.3	11.1	7.7	11.1	23.1	5.6	—	11.1	23.1	11.1

respectively. In contrast to this, the highest concentration of females is at Pirbagh, Hazratbal, Gadi-Mohalla, ranging from 11 to 25 percent and the lowest is at Chachi-Mohalla and Sheikh Mohalla. The maximum percentage of male population in the age group of 5 to 14 has been observed at Ishbar (37.2) and female population at Kralyar (41.7). About 27.3 percent male population of the total males exists in the age-group of 15 to 24 years at Mir-Mohalla and the lowest percentage in this age group has been found at Ishbar (9.3). The females form about 27.2 percent of the population at Pirbagh and only 6.7 percent at Bar-Mohalla.

As far as the highest male population in the age groups of 25 to 34, 35 to 44 and 45 to 54 is concerned, it exists at Kohankhan, Gadi-Mohalla and Shalimar being 17.6, 23.1 and 14.3 percent and the lowest is at Mir-Mohalla, Nishat and Gadi-Mohalla. The female domination in these age-groups has been ascertained at Hazratbal, Bala-Mohalla and Ishbar while their lowest percentage was found at Mir-Mohalla, Kohankhan and Sheikh-Mohalla while observing *Fig. 1*. In the age group above 54, the maximum number of males (16 percent) has been found at Kralyar and females at Khan-Mohalla (12 percent).

Sex Ratio

Sex ratio is one of the vital parameters used in understanding the socio-economic fabric of a community. The average sex-ratio of Srinagar district was 912 in 1981 as against 899 for the State as a whole. In several localities e.g., Pirbagh, Nishat and Ishbar, sex-ratio was close to the state average. These localities are dominated by the fishermen among whom both males and females are earning hands and therefore, females enjoy a good social status. In other selected localities, the sex-ratio is fairly low as compared to the state of Jammu and Kashmir and that of Srinagar district. It may be noted that the male population is dominant in most of the localities. The low sex-ratio shows that the males are better cared and well fed than females in Hanjis. In fact, the females are still a neglected lot and are not properly cared like the underdeveloped patriarchal societies.

Fertility

Fertility indicates the actual reproduction performance of a woman or a group of women. Fertility has a central position in the study of population pattern as the growth in number

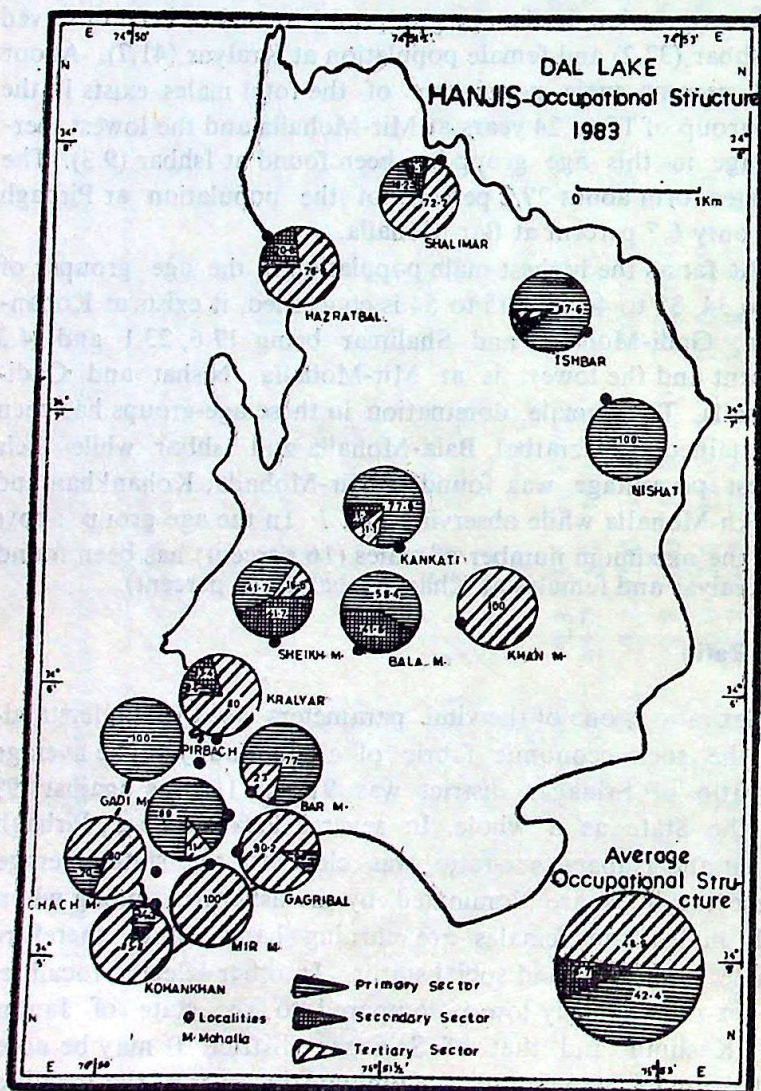


Fig 1

entirely depends on human fertility. Social, economic and biological factors have a direct bearing on the fertility or.

Crude Birth Rate (C.B.R.) of a region or a class of people. In other words, fertility is the positive force by which the population gets expanded and affects the overall population size of the region. The study shows that the rate of birth among Hanjis in the Dal Lake was about 34.7 persons per thousand of population in 1982 which is higher to the birth rate of the urban areas of the state (21.4 in 1981). It is worthwhile to note that C.B.R. of Hanjis is more or less very near to the C.B.R. of rural population which was 33.5 in 1981. The reason for the similarity in C.B.R. of rural areas and Dal Hanjis are numerous, e.g., general backwardness, low literacy rate and lack of general awareness about the concept of family planning and planned parenthood.

Mortality

Mortality deals with the effect of death on population which is a natural phenomena and occurs only after a live birth. It is also affected by biological and socio-economic factors as well as by natural calamities. The Crude Death Rate (C.D.R) for the state was 10.8 and 9.0 in 1971 and 1981 respectively. The decrease in mortality is due to the increasing awareness of the people in making the better use of medical facilities which are available to them. But on the whole the death rate among Dal Hanjis is still high (33.5) which is not a positive sign of a balanced development in the overall socio-economic structure. Most of the Hanjis are fairly backward and the female deaths are more frequent especially during reproductive stage as probably they are not properly cared. Infant mortality is also high which can be attributed to malnutrition, pneumonia, diarrhoea, parasitic diseases, unhygienic conditions, improper maternity services and exogenic causes arising out of the environmental conditions.

Migration

Migration is the movement of persons from one place to another. It is the response of human organism to economic social and demographic framework. Hanjis are generally considered to be a wandering class who either move along with

their residential boats or go with their occupational boats from one place to another. A small percentage of people move on account of marriage because they generally marry among their own relatives and within the same locality or same lake. This also restricts the process of in-migration and out-migration.

Literacy Rate

Literacy reflects the socio-economic and cultural set up of a class or community. This attribute affects fertility, mortality marriage as well as the participation in the work force. Literacy accelerates the process of social change and occupational mobility from primary activities to secondary and tertiary activities and promotes social interactions among the different social groups. The percentage of literacy in various sub-classes of Hanjis is also not uniform. It varies with respect to occupation and annual income of the families.

Hanjis in general, keep their children away from school. On the basis of field survey, the literacy rate among the Dal Hanjis especially in case of females was found as low as 3.7 percent and the percentage of males was 20.5. Correlating these figures with the Srinagar District as a whole, of which 'Dal' is an integral part, backwardness of the community comes to the limelight. According to 1981 census, the percentage of literacy rate in the District was 23.50 and the male and female literacy rate stood at 32.37 and 13.76 percent respectively. The male and female literates in the entire state of J&K in 1981 were 35.49 and 15.80 percent respectively.

Marital Status

Early marriages are common among the Hanjis. The average marriage age of a boy and a girl is very low as compared to other class of people in the valley. A girl among Hanjis is generally married at the age of 15 years, while boys are usually married at 17 years of age. In the age-group of below 14 years (9 to 14 years) as many as 29.9 percent female marriages have been recorded from the sample survey. Among married males, there were about 23 percent married persons whose age was between 12 to 16 years. The age at marriage can be best

visualised from Table 3 showing the break up of married males and females.

TABLE 3

Dal Hanjis.....Sex-wise Age at Marriage (1983)

<i>Age at marriage</i>	<i>Male percentage</i>	<i>Age at Marriage</i>	<i>Female percentage</i>
Below 17	22.7	Below 14	29.9
17-20	40.3	14-17	43.7
21-24	18.8	18-21	18.0
25-28	13.6	22-25	6.6
29-32	2.8	26-29	1.8
32+	1.8	29+	—

It is evident from Table 3 that 43.7 percent females were married when their age was between 14 to 17 years and only 18 percent were those whose age at marriage was 18 to 21 years. In the case of boys 40.3 percent were married at the age between 17 to 24 years and 18.8 of those who were married when they were between 21 to 24 years.

Occupational Structure

By the term 'Occupational Structure,' we mean division of working population in different occupations and professions. The quality of work and the regularity of employment in the active population (working force) reflects the economic and social development of a region or a class. Usually, the age group of 15 to 59 is considered to be the working age-group. The sample survey conducted provides vital information about many facets of their socio-economic structure. For example, it has been found that 34.4 percent of the total population of Hanjis is engaged in the various types of productive activity. The male working force is about 53.9 percent to the total male population where as female participants in economic activity are only 9.9 percent to the total female population. Comparing these figures with Kashmir Division as a whole, according to

1981 census, there were 30.7 percent working population to the total population. The male workers were 52.9 percent and female workers were only 5.5 percent.

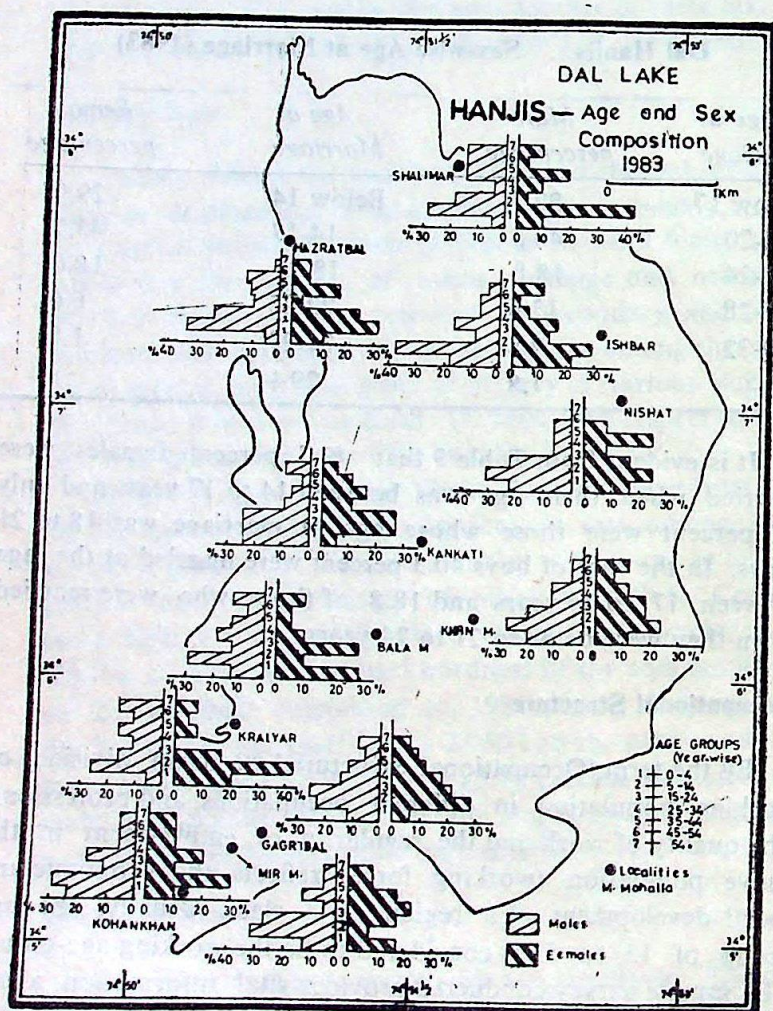


FIG: 2

Owing to poverty and low income, the old people *i.e.*, above (59 years) and children (6-14 years of age) also have to work. These constitute about 8% of the total working force on the basis of data collected from the survey.

The sectorwise involvement of Hanjis has been analysed in the following paras :

Vegetable growers and sellers, fishermen and wood cutters fall in the primary sector as their main occupation directly depends upon the natural bounties. About 42 percent workers are engaged in this activity in Dal lake. The percentage of primary workers is high in Pirbagh, Kankati (77.1), Bala-Mohalla (58.4), Nishat, Ishbar (87.6), Bar-Mohalla (77.0) and Gadi-Mohalla (89.0). In these localities either fishermen or Demba-Hanjis are dominant. These are exclusively engaged in exploiting the natural bounty. The picture can be well assessed from Table 3 which is given below :

TABLE 4
Occupational Structure of Hanjis in Dal Lake-1983

Locality	Percentage-wise		
	Primary Sector	Secondary Sector	Tertiary Sector
1. Gagribal	9.8	—	90.2
2. Mir Mohalla	—	—	100.0
3. Pirbagh	100.0	—	—
4. Sheikh-Mohalla	41.7	41.7	16.6
5. Hazratbal	2.5	20.6	76.9
6. Kankati	77.8	11.1	11.1
7. Shalimar	18.2	9.1	72.7
8. Nishat	100.0	—	—
9. Ishbar	87.6	6.2	6.2
10. Bar-Mohalla	77.0	—	23.0
11. Chach-Mohalla	20.0	—	80.0
12. Kohankhan	14.1	—	85.0
13. Khan-Mohalla	—	—	100.0
14. Kralyar	6.6	13.4	80.0
15. Bal-Mohalla	58.4	41.6	—
16. Gadi-Mohalla	89.0	—	11.0
Average	42.4	8.7	48.9

The above Table 4 shows that the workers in secondary sector are less than one-tenth of the total work force of Dal

Hanjis. The labour force in the secondary sector is not impressive. Only 8.7 percent of the total Hanji workers are engaged in this secondary sector.

Carpet weaving, shawl-weaving, embroidering, persons involved in boat-making, carpentry, rope-making, blacksmithy and tailoring are the major secondary activities. Both males and females are engaged in handicrafts. The localities like Sheikh-Mohalla, Hazratbal, Kankati, Shalimar, Ishbar, Kralyar and Bala-Mohalla have secondary workers between 4 to 42 percent of the work force. The secondary occupation is dominant in Sheikh-Mohalla (41.7%) and Bala Mohalla (41.6%).

The percentage of tertiary workers is about 49. Houseboat Hanjis, motorboat-drivers, shikarawallas, labourers and persons rendering same service connected with trade from this sector. The tertiary workers are concentrated in Gagribal (90.2%), Mir. Mohalla (100.0%), Chach-Mohalla (80%), Kohankhan (85.8%), Khan-Mohalla (100%) and Kralyar (80%) which is clearly depicted in *Fig. 2*. In Gagribal, Khan-Mohalla and Chacha Mohalla, the houseboat owners are concentrated. The shikara wallas and motorboat drivers are confined to Shalimar, Mir-Mohalla and Kohankhan. In Kralyar and Hazratbal, the maximum workers are labourers and workers serving in different offices.

The houseboat Hanjis belong to the tertiary sector and are concentrated mostly on the south-eastern side of the Dal lake. Most of Hanji workers are involved in tourist industry and are generally owners of house-boat, motorboat and shikaras. The workers whose occupation is dependent on tourist industry mostly earn during summer for about six to seven months (mid-March to mid-October). In winters they remain almost idle and unemployed. The shikara and motorboat owners do some sort of labour during the winter to subsidise their income. The workers engaged in houseboat industry usually do some subsidiary occupations like selling of second-hand articles such as suits, jerseys and other clothes which they collect within the country or get from other parts of the world.

The mohallas which are well connected or linked with roads are getting more urban facilities. Their life has been affected

by the people who are not dependent on the lake. They are working in different capacities as government servants in offices. Localities like Kralyar Kankati, Shalimar and Kohankhan fall in this category.

Hanjis, as a class of people, do not belong to fixed income groups. Their income is not uniform and is quite uncertain. This varies from month to month, season to season and year to year. It is more true about those who are engaged in hotel management and houseboat industry. Tourism is dependent on many other factors like the pattern of tourist traffic (inflow), weather conditions etc. It has been observed that whenever there is unstability, the number of tourist inflow in the valley falls and consequently the income of the people dependent on tourists decreases. For plying a boat in the River Jhelum or any lake or stream, each boatman has to obtain a licence from the concerned Department of the State Government. The licences are given according to the type of boat. The rates are also fixed by the government but on occasions they charge as they wish. This point also deserves mention that whenever there is a slump in the tourist rush, the boatmen voluntarily reduce the rates of their boats in order to attract more and more tourists. However, any observer can safely say that only a small percentage of Hanji population, especially houseboat owners is well off. The *Gad-Hanz* (Fishermen) are the poorest of the lot.

This peculiar ethnic group for centuries is closely attached to water instead of land and the various facets of their life demand thorough investigation. Such investigations may go a long way in improving the quality of life of Hanjis who have not been sufficiently benefitted by the modern developments taking place in the vicinity of their habitat.

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14

Geography Behind Religious Personality of Kashmir

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THE physical personality of Kashmir is essentially self-identified and self-isolated. In the accounts of M.A. Stein of the ancient Topography of Kashmir it is recorded that the great mountain barriers around the Valley, until modern times isolated its population from the countries on the sub-continent.¹ In more vehement argument Fredric Drew, wrote, "The Kashmiri people are doubtless physically the finest of all the races that inhabit the territories we are dealing with, and I have not much hesitation in saying that in size and in feature they are the finest race on the whole sub-continent of India. Their physique, their character and their language are so marked as to produce a nationality different from all round, as distinct from their neighbours as their country is geographically separated."²

Kashmir owes its historical or religious unity and isolation to the same facts which give to its geographical position a distinct, and in some respects almost unique character. Stein writes that we find here a fertile plain embedded among high mountain ranges, a valley large enough to form a kingdom for

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itself and capable of supporting a highly developed civilization³. Its height, nowhere is less than 5000 ft. and its peculiar position assure to it a climate equally free from the heat of India and rigours of cold, peculiar to the higher mountain regions in the north and east. The form of the Valley has been justly likened to a great irregular oval consisting of a similarly shaped level vale in the centre and a ring of mountains around it. The plains in the Valley measure about eighty-four miles in length, from south-east to north-west, while its width varies from twenty to twenty-five miles. Stein and Drew estimated the area comprised in this part at 1800 to 1900 square miles. At present, the area of Kashmir Valley, which is wholly on the Indian side, is estimated to be 6131 square miles. Around this great plain rise mountain ranges which enclose it in an almost unbroken ring. The slopes of the mountains descending towards the central plain are drained by numerous rivers and streams, all of which join the Jhelum within the Kashmir plain. The side valleys in which these tributaries flow add much ground to the cultivated area of the country, several of them being of considerable length and width. Even the forests and the higher contours add their share to the economical wealth of the country. The valleys extend rich alpine pastures close up to the line of perpetual snow. In the great mountain chain which encircles the country, there is but one narrow gap left, near the north-west end of the valley. There the Jhelum after combining the whole drainage of Kashmir, flows out by the gorge of Baramulla of its course towards Pakistan. The earlier routes to Kashmir from various sides like Jammu by Budil to Srinagar, Jammu from Bhimber, Rajauri and Pir-Panjal to Srinagar, from Jhelum by Poonch to Srinagar, Mari to Srinagar, Gilgit via Astor to Srinagar, were all closed after the state's accession to India. However, Jammu to Srinagar and Srinagar to Leh remain open. Presently, Kashmir is linked up with India through the only route passing through Kud, Batote, Ramban and Banihal to Srinagar.

This perfect and isolated geographical personality of Kashmir by itself attracts most of the people, within and without, for a source of spiritual inspiration. A geographical or physical personality, manifests itself into its religious personality which

is usually as distinct as that of the former. Religious personality of a nation is reflected through not by religious customs, superstitions alone but by the theory and the religious behaviour of the people. It is true that the religious theory and behaviour contradict each other, while dealing most of the societies in the world, yet any social structure reveals, by and large, a sum-total of a religious personality. Islamic theory may remain the same in Saudi Arabia and Kashmir, yet the practice of it in these societies may considerably differ. Kashmir is no exception to the rule because religious personality is caused by the environment—the environment that suits the temper of religion and vice-versa.

That is why, in Kashmir, since times immemorial, people were guided and are guided to believe in the theory of Monism—the existence of one God. If we concede that the Jewish history of Kashmir existed sometime⁴ we have to accept that not only prophets, seers, saints, purohitas and Brahmins were attracted to Kashmir but also concede that from the beginning of our history the concept of Tawheed was propagated in the Valley. Dr. Aziz Ahmad says, "Whether a Kashmiri Musalman or a Hindu or Pandit or anybody else, all of them believe in the concept of Monism. I have not experienced any Hindu or Pandit who would believe in the plurality of gods—Two, three or innumerable or thirty five crores like Hindus in other parts of India, particularly Hindus of Mathura, Kashi, Banaras, Hardwar etc. There are Hindus who worship sun, water, or the Hindus who believe in thirty five Crores of gods or worship idols. However, the Pandits of Kashmir, invariably believe in one God"⁵. This is reflected through Saivite philosophy, known as Trika which is so called because it accepts Triad as most important. The Triad consisting of Siva, Sakti and Anu or again of Siva, Sakti and Nara or lastly, of the goddesses Para, Aparā and Paratāpara is recognised. It explains three modes of knowledge of reality—non-dual (abheda), non-dual-cum-dual (Bheda-aheda), and dual (bheda). According to the belief and tradition of the Kashmir Saivas, all Sastras which are but thoughts expressed as speech, originally existed as unuttered thought and experience of the Supreme Deity.

The Buddhist history of Kashmir is very obscure—scanty references are provided by Kalhana. Further, Buddhist philosophy is silent about God, yet Kalhana attributes the following verses to it :

“Know that Bodhisattvas are certain beings, who, since (coming of) the blessed ‘Lord of the worlds’ (Buddha have freed themselves in this world from the (five) afflictions,” and then it says,

“They being bent on supporting all beings, do not feel anger even towards the sinner, but in patience render him kindness and are bound to bring about their own final enlightenment (Bodhi)”.⁶

Kashmir, thus, in its environment or physical personality and isolation invited the great religions to flourish. Kalhana is biased with regard to Jewish and Buddhist history of Kashmir, by not mentioning anything about the former and dealing the latter in scanty but sympathetic way. This is marked and noticed by M.A. Stein also when talking on Buddhism in Kashmir he writes in his introduction to Kalhana in the following paragraph :

“It is curious to note side by side with it the manifestly friendly attitude which Kalhana displays towards Buddhism throughout the whole of his chronicle. A long series of kings, from Asoka down to his own time, receives his unstinted praise for the Viharas and Stupas they founded for the benefit of the Buddhist creed. Similar foundations by private individuals are recorded with the same attention.”⁷

However, Stein accepting Kalhana’s partiality for Buddhist cult and traditions, believes that it had for centuries before Kalhana’s time existed in Kashmir peacefully. He writes :

“As far as the laity was concerned, they had to a great extent amalgamated. His own narrative from the point of view where it reaches historical background, gives ample proof of this. Of almost all royal and private individuals, who are credited with the foundations of Buddhist Stupas and Viharas, it is recorded that they, or at least members of their family, with equal zeal endowed also shrines of Siva or Vishnu. In Kalhana’s own time we note that every contemporary

royal personage or minister who is praised for his Buddhist endowments, showed the same pious liberality also in regard to Brahminical temples and establishment".⁸

Hindu period had still more congenial environment in Kashmir than that of Buddhism for two basic reasons. The Saivite philosophy, dominated the laity and the superstitious tradition attached to the Hindu philosophy. Hindu philosophy, in the ancient Kashmir resulted into the Brahminic superiority and even Kalhana is proud to claim himself one of them. Stein writes, "Kalhana's family was Brahminic by caste—Sanskrit learning of the type displayed in the *Rajtarangni* has, in Kashmir, as elsewhere in India, been always cultivated chiefly if not exclusively, by Pandits of Brahminic descent, Kalhana betrays in more than one passage the conscious pride of the 'gods on earth' and his full sympathy with Brahminical self-assertion. We have besides the direct testimony of Jonaraja who refers to Kalhana with the epithet *dvija*."⁹

Saivism, which in the ultimate concept of the divine or the spiritual, tends to be closer to the Islamic concept of Tawheed, had its origin to the very physical personality of Kashmir. P.N.K. Bamzai, substantiates this formulation in the words, "Kashmir, from the earliest times, seems to have been the home of the great division of Hindu religion, Saivism and well suited it was. Situated in the very heart of the Himalayas and possessing beautiful valleys, springs, rivers, lakes, and snow-clad mountains, it seemed to be the land associated with all the mythological stories of Siva and his consort Parvati. The winter when all plant life is dead and the trees are shorn of their leaves, the crisp and life giving spring when Nature slowly comes to life ; and the luscious green summer when all round there is plenty and prosperity, were dramatic representation of Siva the destroyer, Durga the creator and Parvati the preserver. Amongst such divine surroundings, the great rishis in their quiet hermitages like that of Vasagupta at Harvan, perfected a philosophy of a high order".¹⁰ Although Kashmir Saivism reached its highest glory during the eighth and ninth centuries A.D. its origin is attributed to much earlier times by some historians but some treat it to have originated after Buddhism in Kashmir.

Thus Kashmir, during the Hindu period or what is termed ancient Kashmir, is considered to be land of Parvati—religion of the philosophy of nature. Nature is bountiful to the Valley—its running water, water spout, water-falls, cascades, cataract drizzles, cloudbursts, rains, streams, springs, fountains, hills, rivulets, brooklets, rivers, floods, whirlpools, lakes, jungles, mountains and grassy lands etc. Therefore, Parvati came to existence—the goddess who has reverence because she is the remover of obstacles. Thus Kalhana—the poet historian sang :

“May Parvati, the wife of the lord of what moves and of what is immovable, ward off harm, — She in whose half the adorable one, who knows the conduct observed (by all), took up his residence after leaving outside, O wonder, his whole retinue, though (otherwise) ever-trusted; the old chamberlains (or snakes), the age-worn noble bull, and the hump-backed moon”.¹¹

If the tradition to call Kashmir during Hindu period as land of Parvati is properly examined, it would be too mythological to call it so. It would rather be proper to say that it was the land for Parvati. Kashmiri Saivites consider Siva to be the universal soul and expect to be absorbed by him according to Buhler. So Parvati, being part thereof, a preserver, no doubt is not the creator. Durga is the creator. Consequently, the superb beauty of Kashmir was created only to accommodate Parvati, the preserver. It is till this date that Kashmir, its superb climate, charming scenery, measureless appeal, amphitheatre of mountains shimmering with snow, pyramidal peaks, Sun's radiance, luminous spirals and fleeting pillars of loveliness like an offering to the immortal gods is preserved. This is the source of its spiritual attainment and achievement.

The dawn of Islam in Kashmir, neither turned Jewish, Buddhist or Hindu tradition upside down nor distorted any of them but absorbed each in itself. This absorption, however, converted the land of Kashmir from the land of Holy trees, Sapha,¹²—the Hebrew influences, through Stupas, Viharas and land of Parvati to that of 'Peera Wier' i.e. (land of Peers). This does

not, however, mean any conflict or contradiction but a compromise to accept everything new and progressive. Personally, I hope the change to progress is still in the genesis of Kashmir.

Nature is by itself source to religion. Spiritualization of nature is the theme of many great poets superbly to Wordsworth. To him nature is alive and sentient. It has a life to its own; it possess a soul, a conscious existence, and ability to feel joy and love. To him nature is not a mere attractive arrangement of form and colour, it is permeated and pervaded by a spirit, which absorbing flowers of Kashmir, its trees, mountains, lakes, jungles, rivers, plains, paddy fields and all that in the Valley—the spirit present everywhere in Kashmir as in the words of Wordsworth :

“Spirit that knows no insulated spot,
No charm, no solitude, from link to link,
It circulates, the soul of all the worlds”.

In moments of beautiful vision the poet can intuitively realize this all pervasive eternal spirit :

“And I have felt
A presence that disturbs me with joy
Of elevated thoughts, a sense sublime
Of something far more deeply interfused”¹³.

If this be the sentiment of the poet—the sentiment of the laity, the clergy, the religions will be far greater than the words of the poet. The sentiment of the religions, the laity and the clergy will be in the form of communion between him and his God. That is why we find Kashmiris believe that “Saints will aid if men will call”. According to them a dead saint is more efficacious than a living priest. Lawrence writes, “Kashmiris are called by foreigners ‘Pir Parast’, that is saint worshippers and the epithet is well deserved. All the veneration in the Kashmiri character comes out as the Muslman approach a shrine. Low obeisances are made and with bare feet the Kashmiri draws near the doorway and smears his throat and body with holy dust of the sacred precincts. No man will dare pass a shrine on horse-back”¹⁴.

Sir Aurel Stein speaks of the Kashmiris having been long ago called gens religiosissima and says that, to this day, they are far more superstitious than are most Indian peoples. Though there is a change during last few decades, yet the basic structure of the laity and the clergy remains the same. The tradition of Kashmir to this date remains unchanged; and we find that religious places from ancient Kashmir have come down to us in a style of their own. For centuries past, Kashmir has been considered to be the holiest of the holy places. For, according to ancient traditions, almost every hill and mountain, every lake and river in Kashmir, has a divine origin, Writes Kaumudi, "The Kashmir hills and mountains, lakes and rivers, according to legends and Mahatmyas, are the scared abodes of Nagas and heavenly figures, thereby serving as media for the fulfilment of the pious mission, i.e. the washing away of the sins of the faithful".¹⁵

Kaumudi further illustrates, "The Vitasta, the present day Jehlum, is believed to contain within its waters all that is holy in the world, like the sacred Ganges brought down from the heaven and lost in the wilderness of Shiva's matted locks, and then falling again in a fountain from his head to the earth below. Indeed the land came to be known as the Reshi-Bhumi or 'the land of the sages', Shardapitha or the "eternally pure seat of the goddess Sharda."

Kashmir thus possesses innumerable holy shrines and divine heights and streams, attracting pilgrims from all parts of India and from all sections of the people. But while Amarnath, the holiest of the trinity, forms the most important pilgrimage in Kashmir, there are several other sacred shrines and hollow caves associated with the name of some sacred god or the other, still the source of attraction and inspiration to millions in the land".¹⁶

Thus upto today we find the religious places in Kashmir available in abundance and respected by all. From Jewish history we have Tomb of Moses, in Booth, Bandipur, Tomb of Jesus, in Rozabal Khanyar, and from Buddhist tradition we have Buddhist Monastery, Hemis (Leh)¹⁷—to talk of only some. From Hindu tradition we have the following existing religious places :

1. Amarnath, 2. Temple at Tulamul or Khirbawani 3. Trisandhya or Sunda-brari, 4. Takar in Handawara, 5. Rudhra

Sandhya, 6. Vasuknag, 7. Pavana-Sandhya, 8. Sata-Rishi, 9. Spring at Halmatpura, 10. Tatadan (Shopiyan) 11. Kon-Nag, 12. Harmukh, 13. Dyaneshwar, 14. Bumzu, 15. Suyam or Svayambhu, 16. Priyag, 17. Thermal spring (Wuyan), 18. Tsuhar-nag, 19. Helder (Manasbal).

Temples : 1. Temple at Buniar, 2. Linga at Shiri, 3. Temple at Fatehgarh, 4. Narayan Thal, 5. Temple at Tapar, 6. Temple at Mattan, 7, Shankar Acharya, 8. Narpirasthan.¹⁸

Hassan, great Kashmiri Muslim historian provides a list of 46 Hindushrines or worship houses and names of twelve temples.¹⁹ However, most of the historians place the cave of Amarnath as the highest of Hindu reverential places. Even the Hindu laity and the clergy or the community as a whole treat it most sacred the respectful. Let us examine its geography, philosophy and sanctity before we study the spread of Islam and its religious places and their continuity in the cultural heritage of Kashmir.

Amarnath

Most sanctified Tirtha of Kashmiri Pandits and that of Indian Hindus is Amarnath.

Kalhana mentions the Tirtha as the Amburnath. There is reference to it in Kalhana's *Rajtarangni*, while discussing King Nara, who reigned from 1048-1008 B.C. In the footnotes to *Rajtarangni* Stein writes that the Amarisvara is directed to the famous cave of Amarnath, situated at a considerable altitude, 75°.33' longitude and 34°.13' latitude. In the cave Amaresvara is believed to have manifested himself to the gods who entreated him for protection against death. The god is worshipped in a lingashaped ice block.²⁰

For a description of the area, one would treat it a high peak situated about ten miles east-south-east of the Zojila, marking the point where the range, forming the eastern boundary of Kashmir branches off from the main chain. This range runs almost due south until it reaches the southern most headwaters of the Jhelum. It then turns to the north-west and at the Banihal Pass joins on to Pir-Panjal range.

At its northern end and close to the great snowy peak, is the Tirtha of Amarasvara or Amarnatha known by Kalhana's name

as Amburnath. Even Stein treats both Ganga lake on mount Haramukhta and Amarnatha as the most popular of Kashmirian pilgrimage places. Its yatra in the month of Sravana attracts many thousands of pilgrims, not only from Kashmir, but from all parts of India. Since the accession of the State of Jammu and Kashmir to India, the State Government, as their predecessors or kings, spends lakhs of rupees on the welfare of the pilgrims to and fro the cave. The goal of the pilgrims is the cave situated at a considerable altitude and formed by a huge fissure on the south side of a snowy peak 17,300 feet high. In this cave there is a large block of transparent ice formed by the freezing of the water which oozes from the rock. It is worshipped as a self-created linga and is considered the embodiment of Siva Amaresvara.²¹

According to Stein, scanty references made about this Tirtha in the Rajtarangni and the Nilmata, it appeared doubtful whether it could have enjoyed in old times quite such great celebrity as now. However, it may be mentioned that more distant past seems to the new, the most significant era. Jonaraja relates a visit to this sacred site paid by Sultan Zainul-Abidin. Mahatmya literature grants Amaresvara due attention. The pilgrims route described in great details by the Amarnatha Mahatmya ascends the eastern branch of the Lidar or Lidari.²²

The celebrated cave of Amarnath is visited by thousands of Hindu pilgrims from Kashmir and other parts of India on the full moon day of the month of Sawan (July-August) every year. According to the belief, the self-formed ice linga, the emblem of Siva, waxes and wanes with the moon. The cave is at the distance of 91 miles, divided into eight stages from Srinagar—they are Avantipora, Anantnag, Mattan, Pahalgam, Chandanwari, Wawjan, Panchtarani, and Amarnath. The last four stages are hilly and the region destitute of human beings. Even trees are not found in the area and shelter is not available. The thunderstorms, hailstorms and heavy rains not only cause inconvenience to the pilgrims but even causes loss of human life.

On the 11th day of the bright fortnight of Sawan all pilgrims gather at Pahalgam. Next day, i.e., 12th, all of them march toward the Tirtha in the style of a caravan. There are shops or Bazar, a Canvas Town established at each stage of the journey

and so on. The procession receives austerity because all people recite shlokas and verses from Ramayana or Bhagavadgita. Pt. Anand Koul says that the caravan reminds us "of a long past age when the Rishis migrated in a host to Kashmir to practice austere penances, and of the fact that through all the centuries as now religion has been the over-mastering passion of the Hindu race",²³

The pilgrimage is a compact procession both for its austerity and safety. The route leading to the Tirtha is so uneven and often visited by snow-storms, hail storms or rain storms that it is safe to march together. Many perish on the way and the higher casualty rate is with the Sadhus who are usually ill-clad and the old or the old women. The State Government looks after the welfare of the pilgrims by way of issuing rations and medical aid—this process is in practice since Gulab Singh. Since long the route leading to the cave has been improved and to look after the pilgrims, the Tehsildar of Pahalgam, one magistrate, one medical officer, police contingents are usually incharge of the pilgrim camps. Now sheds and barracks have been constructed at Chandanwari, Wawjan and Panchtarni. On the way the pilgrims are supposed to bathe at the following places :

Ganpatyar, Shuahyar, Shivapura, Pondrethan, Sidhyar, Barus, Jahhrari, Mithawan, Avantipura, Hari, Gyuru, Vagahom, Chakadhar, Divakiyar, Harishachandra, Thajiwara, Sirahama, Badur, Srigufwara, Sakhras, Salar, Kothas, Khelan, Ganeshbal, Mamleshwar, Braghu Tirtha, Ramkund, Sitakund, Lechmankund, Hanuman Kund, Nila-Ganga, Chandanwari, Shishram Nag, Wawjan, Panchatarani, Amara-vati, Sangam, Naudal.²⁴

These were the prescribed places at which to have a bath but practice is followed today by rare persons amongst the Sadhus who accompany the *Chadi* or holy mace of Lord Shiva. The pilgrims, no doubt, assemble at Pahalgam, where mostly, they reach by any convenient road transportation. The trek on foot begins from Pahalgam because no vehicular traffic is available beyond that stage. However, in future the state of things is likely to change.

There is another route that leads to the Amarnath Cave. The route moves through the dens of Sonamarg near Baltal. It is less by nearly 20 miles than the one via Pahalgam. Upto Baltal, the Highway to Ladakh is usually well maintained, especially since Chinese invasion it secured a significance. From Baltal to Amarnath there is a distance of only 12 miles—which also has been improved by constructing a road. The route as such is easier and safer than the one via Pahalgam.

Having visited, last autumn, one of the Hindu Tirthas at Dyaneshwar in Bandipur, with an Australian, we were not convinced that there existed any stone udders of a cow. When the Australian enquired of me if there were any images in the cave, I unhesitatingly denied having any but I revealed to him my impression. I said that faith is deep rooted in man and religion natural to him. Each having his own faith and hence every Hindu must observe all the images he believes in and find them in the cave. The reason is simple. The place at Amarnath, is so calm, so serene and attractive that anybody who has a common sense, finds a spirit moving everywhere around it. The religious personality of Kashmir lies in this physical personality in the manner as Augustine puts it in the heavenly city, "while it sojourns on earth, calls citizens out of all nations, and gathers together a society of pilgrims in all languages, not scrupling about diversities, in the manners, laws, and institutions whereby earthly peace is secured and maintained"²⁵ and that these diversities of Pandits, Muslims, Sikhs and others in Kashmir are preserved as long as Kashmiris are united in the service of God, on these shrines. Tirthas, mosques, dargahs and Astans amidst the environment governed by an absolute spirit.

So far we have examined various religious places and their environmental significance and we now intend to deal such places which are respected by Muslims in the Valley. Islam made its way into Kashmir, says Stein,²⁶ not by forcible conquest but by persuasion and gradual conversion, for which the incoming of foreign adventurers both from South and from Central Asia had prepared the ground. The adoption of Islam by the great mass of the population began towards the close of Hindu rule, and became an accomplished fact during the later half of fourteenth century. The conversion thus, "did neither affect the

independence of the country nor at first materially change its political and cultural conditions. The administration remained as before in the hands of the traditional official class, the Brahmins, for whom a change of religion presented no advantage and who accordingly retained their inherited status, together with its literary traditions".²⁷ The conditions as such are indicated by the frequent references found in Jonaraja's and Srivaras' chronicles to Brahmins holding high official posts under the early Sultans. That Sanskrit remained for a considerable period after the end of Hindu rule the medium of official communication.²⁸ Thus even after the conversion to Islam the Kashmiris retained what they had inherited from their past—they carry it even to date. G.M.D. Sufi rightly remarks that the Kashmiri is essentially mystical and imaginative, those who have known him intimately and studied him closely will readily admit it. His environment has made him so. Huge snowy peaks, flowing silvery streams and sublime solitudes have induced this frame of mind.²⁹ We find that while Kashmir was land of Parvati in ancient India and later Rishi Bhumi finally after conversion to Islam, became 'Pir Weir'—i.e. the place of pirs, saints and the virtuous.

Consequently, the spread of Islam, changed Kashmir to the phase which may be treated a process of Islamization of what had been inherited from the past. This, however, did not create a social structure devoid of earlier customs and traditions. Religion, therefore, to Kashmiris, is not what Islam genuinely preaches, but according to Lawrence it is an elaborate social code prescribing the conduct of daily life the sanctions of which are social and not religious.³⁰ That is why Kashmiri Muslim is more 'Pir-Parast' and 'Astan Parast'. Muslims have retained the characteristic of being Pir Parast from traditions of the past when they were Hindus. It is in this regard that Lawrence treats Kashmiris in their hearts as Hindus and thinks that the religion Islam is too abstract to satisfy their superstitious cravings and accordingly, they turn from the mean priest and mean mosque to the pretty shrines of carved wood and roof bright with the iris flowers where the saints of past time lie buried.³¹ In view of this fact, General Zia-ul-Haq of Pakistan, in April 1979, called Kashmiris as Brahmins without subscribing to the view

that Brahmins are intelligent. Thus all the veneration in the Kashmiri character comes out as the Musalmans approach a shrine. That is why Alam Khundmiri, once, while in the University of Kashmir as a visiting professor, remarked that Kashmiris are more seen in shrines than in mosques. Hassan, great son of Kashmir, has provided detailed accounts of as many as two hundred and fifty shrines of Syeds and names the shrines of four hundred eight Rishis. Further he mentions the names of burial places of shrines of fifty Sheikhs or learned saints and thirty seven names of religious scholars. He provides the accounts of nearly hundred three personalities who were infirm or invalid with saintly attitudes and intuitions. He gives the details of about fifty eight sacred relics available in Kashmir. He then accounts for eighty-five Persian poets and their places of burial.³² Most of these Syed, Rishi, Sheikh, invalids, learned men, sacred relics and Persian poets and their shrines are respected by the Musalmans and most of them are thronged by people on either annual or bi-annual functions. Muslims, therefore, at present have exceeded in number of religious places as compared to non-Muslims. To provide the names of all small and big shrines is beyond the scope of this article and hence certain important places are given as provided by W.R. Lawrence :

Hazratbal Dargah, Shah-i-Hamadan Mosque, Jamia Mosque, Shrine of Nur-uddin at Chararisharif, Ziarat of Dastgir at Khanyar, Ziarat of Mukhdoom Sahib Hariparbat, Khaja Nakshnbandi and Rishis at Ashmuqam, Baba-Rishi Gulmarg, Baba-Shukar-uddin and many more. Let me, therefore, examine Dargah Hazratbal as the single-most significant religious place in Kashmir, which having made and unmade many a time the history of Kashmir.

Lawrence gives the following account about the Dargah Hazratbal :

“The shrine of Hazrat-Bal is beautifully situated on the shores of the Dal Lake, and a great fair is held there at the beginning of March, to which thousands resort from all parts

of the Valley, bringing with them the flags of renowned saints. The sanctity of Hazrat Bal is due to the presence of one of the Prophet's hairs, which was brought to Kashmir from Medina by Saiyed Abdullah in 1111 A.H. Saiyed Abdullah sold the hair to a merchant, Nur Din, for one lakh of rupees, and Nur Din exhibited the relic in Srinagar. The crowd was so great that many persons were crushed to death, and the ruler of the country wisely ordered that the hair should be kept in some open place. Four other shrines in Srinagar boast that they possess a hair of the prophet—Kalashpura, Andwara, Sowra and Dangarpura—and some believe that the hair shown at the shrine of Nabi, Paighamber in Khirm by the Lidder Valley, is genuine. The hairs are exhibited six times, in the year, at the various shrines, but the villagers all go to the Hazratbal Shrine”.

Many historians relate the history of the sacred relic in the Dargah of Hazratbal. It is said that one Syed Abdullah, who was wealthy person and remained a custodian for the Prophet's grave, was a rebel against commands of the king of Rome. Accordingly, he was banished from Medina Munwara. The Governor of Medina, in accordance with commandments from the king banished the Syed to India in the months of 1024 A.H. On his departure from Medina he carried with him three sacred relics—one the hair of Prophet Muhammed (peace be upon him) and his Turban and thirdly the saddle of the horse used by Hazrat Ali; He reached India during the reign of Shah-i-Jehan, the Mughal emperor. The Mughal king received him cordially and as a mark of respect allotted him a jagir at Bejapur. Later on his death, his sons favoured Daro-Shikow and their jagir was confiscated. The sons had to visit Shah-i-Jehanabad to get their jagir released—their incomes were limited and consequently pawned the sacred relic against a heavy debt, to Khaja Nur-Din, a Kashmiri businessman who lived at Urdu Bazar in Shah Jahanabad. The release orders of the jagir could not be possible easily and early—they had no capacity to return the debts and consequently the sacred relic was willed to Nur-ud-din. Nur-ud-din treated it as a boon and testified the debts to have been paid off. Nur-ud-din decided to return to Kashmir along with the

relic. Before he could reach the destination, the spies conveyed the news to the King Alamgir. While Nur-ud-din had reached Lahore, where he was arrested and along with his servant Ghulam Hassan who looked after the safety of the sacred relic, were presented before the court. The king ordered after the Deedar of the sacred relic that it be kept at the shrine of Muin-uddin Chishti (Rehmatullah Allah). The sacred relic had been in the precincts of the Durgah at Ajmer only for nine days, when it is believed³³ the king had a dream and the Prophet Muhammed (peace be upon him) directed the king to return the sacred relic to Kashmir and the commands through the dream were complied with. The servant of Nur-ud-din, on return from Ajmer reached Lahore where he found that Nur-ud-din had passed away. Accordingly, he set on journey to Kashmir along with the sacred relic and the dead body of Nur-ud-din.

As soon as the news broke in Kashmir, the lovers of the Prophet (peace be upon him) and Muslim laity, clergy and the learned men reached Hirpur near Shopiyan to receive the sacred relic. The procession, in all its ecstasy reached Srinagar and the sacred relic was placed in the shrine of Hazrat-i-Moin-ud-din Naqushbandi. The sacred relic was removed and placed in the Bagh-i-Sadiq Khan, present site of Dargah, on the ground that it had vast area to accommodate the people who used to come for Deedar. On its first observance at the Khanqah-i-Naqishband by Sheikh Mohammad Radhu, who led procession to Hirpur as well, many people had died in stampede—so the shift in venue was necessitated.³⁴ The Mughal king donated three villages in favour of the shrine to meet the expenditures on its maintenance.³⁵

Sheikh Mohammad Radhu, remained as the custodian of the shrine at Hazratbal till his death and he functioned as the man to hold the sacred relic for the observance of the public. Later the task was assigned to the son-in-law of Nur-ud-din, named Bilaqi Bandy—since then uptil now it is the Bhandys who inherit this function. In the beginning its observance took place twice a year and now shown six times a year, but on ten days in all.³⁶ Four other shrines in Srinagar claim that they possess a hair of the Prophet but all the people in Kashmir respect the Durgah at the highest. Consequently, the Dargah at Hazratbal

enjoys the central position—attracting all Musalmans from all corners of the Valley—be it Karnah or Gurez or Pahalgam or any people in the far-off jungles—all pay a visit at least once a year. At present, the visit to this shrine is scheduled by every visitor to the valley.

Islam in Kashmir is tradition-oriented and governed by physical environment. Accordingly some criticize the Muslims of the Valley for not being genuinely Muslims. G.M.D. Sufi wants Kashmiris to be reformed on this score and instill in them the real spirit of Islam *i.e.* Tawheed. Analysing and commenting on the Dargah Hazratbal, he writes :

“The type of Islam that prevails in Kashmir was commented upon (Supra Chapter I, pp. 19-20) by Mirza Haider Dughlat, whose stay in the Valley lasted for ten years from 1541-1551 A.C. In fact, a puritan like an Akhwan resident of the present day al-Riyad in Najd, Saudi Arabia, would hardly believe that a number of the practices of the Kashmiri Musalman are at all Islamic. Perhaps, to him, Islam in Kashmir would be but a definitely deformed version of the real teachings of the Prophet of Arabia. As Mr. Abdullah Yusuf Ali points out, the Buddhist worship of relics has insidiously crept into India's Islam. It is nowhere so prominent as in Kashmir. On the occasion of the exhibition of the Prophet's hair there—which, according to a *tete-a-tete* was thrown into the fire by Azad Khan, an Afghan governor, in order to test its genuineness—crowds of Kashmiris, assembled, are seen weeping and wailing like the Jews, before the Wailing Wall of the Aqsa in Baitul Muqaddas (Jerusalem). Again the mystic teachers known as the Pirs, ascetic and holy men have almost created a priesthood and hereditary sacred caste. Necromancy and a belief in omens and magic has gained ground, in spite of the Quran protest against them. The Tavis and the ganda have nowhere such vogue as in Kashmir. Pure monotheism and the moral fervour of a society based on social equality has in practice nowhere receded more into the background”.³⁷

In Kashmir, mostly, a Muslim shrine exists with a Hindu shrine—Shah Hamadan along with *Kali Devi*, near Makhdoom

Sahib shrine is situated Hindu temple of *Sarika Devi*. The ancient chronicles feed the idea that even at Sudrabal and Hazratbal ancient Hindu religious places existed. In ancient legend related by Kalhana represented the spring at Sudrabal near Hazratbal as an avatara of the Sodara Naga worshipped originally near the sacred site of Bhutesvara below Mound Harmukhta. Stein further exploring the relation from Sudrabal to Hazratbal writes :

“Close to the mosque of Sudrabal and by the lake shore are two pools fed by perennial spring. These, according to a local tradition, were in old times visited by numerous pilgrims. Now all recollection of this Tirtha has been lost among the Brahmins of Srinagar. But the name of a portion of the village area, Battapor, points to a former settlement of Battas or Pulohitas. It is curious, too, that we find only half a mile from the village the Ziarat of Hazratbal, perhaps the most popular of all Muhammadan shrines in the Valley. It is supposed to be built over the remains of the miracle-working Pir Dastagir Sahib”. “Is it possible”, Stein questions “that the presence of the rather ubiquitous saint at this particular spot had something to do with the earlier Hindu Tirtha”.³⁸

It would be interesting to mention here that due to this complexity of religious personality of Kashmir, having cognizance to the geographical or physical personality, all aspects of a Kashmiri are intertwined and mixed up. Thus the shrine whether Muslims or Hindu is a place of not only the worship or the communion between the Kashmiri and his God but also platform for politics, economic welfare a social and festival gathering. This can be illustrated in many ways.

Since 1931, though one can study past too, the Muslim shrine in particular became a platform to fight against the Dogra Rule. The freedom struggle in Kashmir, which dawned in the month of July, 1931, started at the shrine of Shah Hamadan Khanqahi-Mualla, when one Mr. Abdul Qadeer (or Kabir) had a devastating speech against the Dogra Rule in Kashmir. A

criminal case was instituted against Mr. Abdul Qader. However, proceedings could not run a chance in an open court. The authorities, therefore, shifted the venue of the court to the premises of the Central Jail and the court was scheduled to sit on 13th July 1931. Sheikh Mohammad Abdullah, who remained all along the freedom struggle, a man from the shrine, reciting the verses of the Holy Quran and the verses from Alama Iqbal, delivered a fiery speech in a mosque at Batamalloo. It is reported that he stated before the public, "Be prepared to be sacrificed for the sake of helpless (Mr. Qadeer) man in the prison and that he was being prosecuted for them".³⁹ As a matter of fact, all Kashmiriologists agree that most of the speeches made by Sheikh Mohammad Abdullah and other leaders came from the political-religious platforms of the shrines—whether it be Jamia Masjid, the shrine of Shah Hamadan at Khanqahi Mualla or Dastagir Sahib or Idd-gah or anywhere from a mosque. During the dawning period of struggle, on 9th July 1931, the Governor of Kashmir read out a message from His Highness to His subjects, in the exhibition grounds, promising enquiries into grievances pertaining to majority community.⁴⁰ Even this message was formally rejected in a mammoth meeting held in Jamia Masjid on 10th July, 1931.

The Sheikh, who dominated the political scene for half a century (1931-1982), was both a political leader, a passion for common people, and a religious forerunner. People sought blessings from him. He had allegiance to the Durgah at Hazratbal. He delivered his most important and historical statements at the shrine from time to time. The Sheikh rebuilt it in a grand distinctive architectural design as it exists today. Bakshi Ghulam Mohammad, true to this tradition, renovated and rebuilt the shrines of Mukhdoom Sahib, Hamadan Sahib, Dastagir Sahib and that of the shrine of Sheikh Nur-uddin Wali. The politics of Kashmir is, thus, the politics of the shrine of the leader. It is in tradition, a cult of the shrine, and cult of a leader.⁴¹

The National Conference (earlier the Muslim Conference) and its leadership, captured the central position by associating itself with the shrine at Hazratbal—it is this shrine that gave him courage and consolidated his party to fight for freedom upto

1947—the freedom that was unknown to the people of Kashmir for many centuries. The freedom that ensued this struggle may be disputed at present, but the fact that Kashmiri saw an awakening in the post-1947 era, is historical fact but miracle of the shrine.

In the post-1947, upto today, the shrine in Kashmir, particularly the Dargah at Hazratbal, saw terrible upheavals, not only in its architectural design but in the form of struggle for power. The political history of the shrine witnessed not only the great statements and confrontation of the leaders of the National Conference, particularly the Sheikh's struggle both for power and identification of Kashmir, but the shrine caused the down fall of many governments. Whether religious or the political upheavals, initiation came from the shrine's platform. In a public speech at Hazratbal shrine on Id-i-Milad the Sheikh said as early as 1949. "Today beauty of Kashmir is a source of trouble for us—every powerful government desires its occupation".⁴²

Later, the Sheikh's fall in 1953, Bakshi Ghulam Mohammad's ascendancy to power for ten years, long detention of the Sheikh, his freedom at intervals, saw many upheavals at the Hazratbal Dargah. The greatest however, was the theft of the sacred relic on December 27, 1963. It was stolen from old-mosque at Hazratbal after breaking open the special room where it used to be lodged. The news of the disappearance of the holy relic spread like wild fire. It caused widespread dismay and anger among the people. Bamzai remarks that it was a preplanned conspiracy. "Apparent from the very fact that within minutes of the occurrence, thousands of black flags were thrust into the hands of the people who came out en masse into the streets and open spaces of Srinagar in defiance of the inclement weather and the rigours of biting cold and frost".⁴³

Who conspired is still unknown but the great intelligence officer's contention is that the conspiracy was hatched by Pakistan. He writes : ⁴⁴"From the investigation which we had so far conducted, the interrogation of the large number of the people whom we had listed in the conspiracy as well as from the examination of a large number of top people in Kashmir of all political shades, it was clear that Pakistan through Pir Maqbool

Gilani with the assistance of some of his important contacts in Kashmir who had recieved money for this purposes from Pakistan had arranged the removal of the Moe-e-Moqaddas. This reporting by Mullik has not been accepted by most of the shades of public opinion in Kashmir on the ground that the culprits were not punished who had committed this heinous crime on the instigation of Pakistan. However, whatever be the realities, the fact remains that importance of the shrine on account of the sacred hair is beyond the purview of a common man. It was possibly Nehru who could understand its importance as reported by Mullik.⁴⁵

The telepone line, as if by magic, revived, and the Prime Minister came in the line. This was at about 6 p.m. I told him in great excitement that I had recovered the thing. The Prime Minister as asked what ? I said, I had recovered it. He said, 'Recovered it, the Moe-e-Muqaddas.' I said, "Yes, the Moe-e-Muqaddas". He said, "God bless you, Mullik you have saved Kashmir for us. Then I contacted Balbir and asked him to pass on the news to the Home Minister, other Ministers concerned and the press."

The shrine with Moe-e-Muqaddas, was accordingly Kashmir, the land of Pirs, Faqirs, Saints, Purohitas, the laity and the clergy—in short Kashmir in essence and countent-Kashmir its physical and religious personality.

The annual fairs at the various shrines, sys W. Lawrence, are red letter days in the dull lives of Kashmiri people.⁴⁶ Thousands crowd together and spend and day—eating and buying including praying. They spend marketing Kangiries, wooden pattens, swæets, glass bangles, necklaces and vegetables at the surroundings of Dargah. Alms flow into the shrine, where the many Khadims fight vigorously over the offerings. Sacred relic is held out by the head priest for the observance of the devotees. According to Lawrence, "people believe that a visit to the shrines will secure the object of their wishes. Sick men will regain health, women will be vouchsafed children".⁴⁷ The litigant will win his case, if pilgrimage be made to Dargah or to any other important shrine. The white or red rags are tied to

the shrine and are placed there by supplicants for offsprings, and till a child is born the rag is left in its place.

The shrine at Dargah, having central position, usually on all sacred days, perform religious exercise called Zikr. While the devotees and the laity are in prayers or observe the sacred relic they sing hymns presently Persian or Kashmir, the same way as the Darvesh or the forerunner dance their heads. The mind according to Lawrence is thrown into a whirlwind, and the dancers fall into a religious ecstasy. The shrine is also used for purposes of an impressive ceremony known as Nafl.⁴⁸ Musalmans from all parts of the Valley, in particular the people from Srinagar gather at the Dargah, when scarcity is imminent, or calamities such as earthquake, cholera, and drought occur, to offer Nafl. There were offered prayers, Nafl and sacrifices at two important occasions since 1977—first on the illness of Sheikh Mohammed Abdullah during elections of 1977 and second before his death while he was on bed. On both the occasions a number of sheep were sacrificed at the Dargah.

The people of Kashmir generally believe that a visit to the shrine will secure the object of their wishes—economic also. Therefore, early in the morning, you find, even now-a-days, people from all walks of life to pray for their economic welfare or economic gains during the day. Having observed myself, a Musalman leading advocate from Kashmir High Court Bar, descending from the car at about 10 in the morning near the shrine, folding his hands pointing to Dargah, reciting verses silently and then moving to his day's work. Having personally observed the politician on the platform of the Dargah, politician early morning on the side of the head priest, businessman on its threshold to pray for economic gains, a smuggler to pray for the safety of his goods across the destined goals, the bureaucrat for promotions and pleasure of his officers and finally the lover in company of his beloved. Most Kashmiris whether Hindu or Musalman bow before the gates of the Dargah while passing through it. Having experienced that the research scholars before submitting their theses to the University of Kashmir, visit the shrine along with the theses. Actually so to say Kashmiri Musalmans by tradition, and not by faith believe in 'waṣalat'. This may be even to some un-Islamic, yet he not

only believes in it but practises the same. According to G.M.D. Sufi, it is detrimental to the progress of a society—he writes:

“This habit of the “wasila” is, I am afraid, responsible for the habit of ‘Sifarish’ in life, so rampant throughout the Valley. This saps self-reliance. The ‘Sifarshi’ is more anxious to seek the wasila than to work hard to improve his prospects”.⁴⁹

Kashmiri non-Muslims, particularly Pandits are no exception to the rule. They do not only pray for their gains in life apart from spiritual attainments, like their Muslim counterparts but even bow before all Muslim shrines including Dargha Hazratbal. However, no Musalman with whatsoever tradition, bows before a Hindu worship house or a shrine, except at few places.

During last one decade there is a change amongst some Muslim sections in Kashmir due to Islamic revivalism in some Muslim countries. However the detrimental force behind the fundamental approach is that it does not suit the temper of the Kashmiri Musalman. The fundamentalist gives to Islam the meaning of militancy, which is against the very nature of a Kashmiri. It is this Muslim conscience that has defeated Jamat-i-Islami Kashmir in the last elections to the State legislature in the state.

So far we have been able to examine the religious behind the physical personality of Kashmir and possibly we have been able to strike the balance that Kashmir as it physically stands suits to the temper of many religions. That we Kashmiris experienced and practised at least three to four religions and passed from one to another peacefully and with tolerance, is a fact of history. However, I am constrained to refer to you the sentences in the Jackets of two books one published in India and the other in Pakistan to reveal the percent dichotomy particularly religious that confronts an intellectual in Kashmir.

The Jacket of one book published in India invites the attention :

“With its hoary mountains, precipitous waterfalls, panoramic valleys, verdant gardens, murmuring brooks, enchanting

streams, lush green tiny terraced fields, and gleaming glaciers. Kashmir, the paradise on earth is the Crown Jewel of India."

The Jacket further adds,

"The heaven on earth, Kashmir attracts innumerable tourists and pilgrims because of scenic grandeur, salubrious climate, sacred temples, mosques, monasteries and orchards. The Kashmiri workers are known over the world for their woollen fabrics, silken cloth, ivory work, handicrafts. Kashmir stands unique for its contribution to Indian cultural heritage."

The Jacket of the book on Kashmir published from Pakistan reveals :

"The State has many valleys such as the Kishenganga valley, the Gurez valley, the Astore valley but the most famous of them all, which is also easy of excess and frequented by tourists from all over the world, is the Valley of Kashmir. It is the biggest valley of its kind anywhere in the world and has been described by Imperial Gazetteer of India 1909 as "an emerald set in pearls". It has also been called 'Jewel of Asia'. The map of Pakistan is incomplete, without the star in its crescent".

The Jacket of the book further adds,

"A moving records of the bloodiest of all struggles for freedom launched by Indo-Pakistan Muslims anywhere...it is not a history of kings but of the people...only a Kashmiri-speaking Muslim could have the 'feel to write the epic'".

Thus, the unfortunate part played by the history of Kashmir is that the Indian intellectual finds Kashmir standing unique for its contribution to Indian cultural heritage and Pakistan intellectual treats it a source of Pakistan's ideological and national perfection. That is why I believe that Kashmir stands magnificently possessing essentially self-isolated geographic and self-identified religious personalities. This self-isolated religious personality of Kashmir is redundant to the Pakistan's claim of Kashmir on religious basis.

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Spatial Distribution of Muslim Shrines in Kashmir Valley

KHURSHEED ANWAR*

A Shrine is defined as 'a place where religious devotion is paid to a saint or deity ; it is usually considered hallowed because of its association with saintly persons.¹ It also means a tomb or tomblike erection enclosing the relic of a saint.² In an exaggerated sense a shrine is taken for 'a place that is considered sacred by a religious group and that serves as the focus of the performance of some rituals.³

Kashmir has a very long history of shrines. Abul Fazal enumerated some 113, old but important, Hindu shrines, besides 700 places where graven images of snakes were being worshipped.⁴ In fact, Kashmir has from times immemorial been the of home gods and goddesses, renowned *mystics*, *lamas*, *sadhus*, *pandits*, *rishis*, *peers* and *faqirs*. The numerous caves, temples, shrines and mosques, which have survived the ravages of time and inclemencies of weather are living testimonials to corroborate the fact. It is for this reason that many historians have named Kashmir a '*Rishi Vari*' or '*Pir Vari*', the abode of *Rishis* and *Peers*.

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The *Rishis* and *Peers* have wielded unbounded popularity and attachment over the Kashmiris by way of their piety, simplicity, selflessness and resilience. They went from village to village and from street to street preaching religious tolerance, amity among all and enmity with none. They were the living symbols of communal harmony. The Father of the Nation, Bapu, had found a 'ray of light' only in Kashmir, when the whole subcontinent was burning. This is only the result of their endless efforts that the blood of Kashmiris has remained calm and cold for centuries even at times when they were given every provocation to break the communal bond. It is because of these virtues that they are still venerated by Hindus and Muslims alike. As a token of love, respect and devotion, people have constructed shrines over their graves, enshrined their relics and preserved the places, where they spent even a little bit of their time.

The *Rishis* of Kashmir, who are reported to have numbered 2000 and according to Mutamid Khan 10,000,⁵ being Muslim by faith are responsible for the mass conversion of the Kashmiris to Islam. Of course, the process was aided to fairly large extent by the *Sadats*, who came from Iraq to propagate Islam in the Valley. The *Sadats* were the scholars and theologians of Islam, The 1971 census recorded 2,289,530 Muslims out of the total population of 2,435,701 in Kashmir Valley, forming 93.99 percent. The overwhelming Muslim population is the product of the missionary zeal of the Muslim scholars and of these *Rishis*. They visited every nook and corner of the valley. The shrines which have been erected in their memory are living testimonies of the fact. In the valley there is hardly any locality which does not have a shrine. The 1971 census enumerated 134 important Muslim shrines in the villages of the Valley which numbered 2940 in 1971. The urban areas of the Valley have even more concentration of these shrines. The reason being that the *Sadats* (who numbered 700)⁶ chose the highly congested areas as their Headquarters. Later they diffused to the country side also, but their shrines still remained in these dense pockets, which are now the urban centres of the valley. Contrary to this, the *Rishis*, who indulged in deep meditation, observed celibacy refrained from taking fish or mutton for longer periods of their

life, remained confined to the remote countryside. They chose hilly and elevated areas, distant from the hue and cry of people in order to achieve spiritual enlightenment. That is why most of the shrines of the *Rishis* are located in the hills and mountain slopes. Table 1 shows the tehsil-wise distribution of major shrines.

TABLE 1

S. No.	Tehsil	No. of villages	Total No. of Important Muslim Shrines
Distt. Anantnag			
1.	Anantnag	270	33
2.	Kulgam	311	22
3.	Pahalgam	65	7
4.	Pulwama	248	6
5.	Shopiyan	228	3
6.	Tral	80	11
		1202	82
Distt. Srinagar			
7.	Badgam	186	1
8.	Beerwah	180	3
9.	Chadura	142	6
10.	Ganderbal	136	13
11.	Srinagar	62	5
		706	28
Distt. Baramulla			
12.	Bandipur	73	9
13.	Baramulla	165	3
14.	Gulmarg	101	1
15.	Handwara	183	—
16.	Karnah	49	—
17.	Kupwara	137	—
18.	Sonawari	86	2
19.	Sopore	138	6
20.	Uri	100	3
		1032	24
Grand Total		2940	134

Apart from their religious significance, the shrines of Kashmir Valley have a tremendous socio-economic and political importance. Each Muslim shrine has a festival attached to it, which is generally held on the anniversary of the saint with

whom the shrine is associated. People come in large numbers in order to seek the blessings of the saint. On the festival days, every apartment of the shrine is left open for the pilgrims and relics of the saints are displayed. Majority of the Kashmiri Muslims profess divine faiths in these shrines, as most of them associate Godly powers with the saints entombed in them. Those who are afraid to give them a divine status, at least take these saints as persons more near to God. Such people attend these shrines to seek their recommendation before God. Muslims have mosques to worship Allah, but were and are still not sure that it is prudent wholly to neglect the godling.⁷ The illiterate Muslims attend the shrines with folded hands in order to invoke blessings of the saint, women are generally found beating their breasts and ailing people moaning and crying for help from the saint. The *mazdoors* (labourers), the *Hanjis* and many others still use to cry "Ya Pir Dastagir"⁸ meaning 'Oh Pir, Lend me a helping hand'.

Keeping in view the loyalty of the general public towards the saints, the Kashmiri rulers and politicians have from time to time exploited their sentiments in order to gain support from the public. Like the Afghan Governor, Atta Mohamad Khan struck coins in the name of two leading saints of Kashmir, Sheikh Nooruddin and Sheikh Hamza Makhdum in 1808-10.⁹

Excepting a few, all the Muslim shrines are looked after by the J & K Muslim Auqaf Trust, a public organization, established in 1942. It possesses a number of large pieces of land in the Srinagar city as well as in the rural areas. Hundreds of shop complexes have been established on these lands, which are rented out to the public. Besides this land and business complexes, the shrines are a source of perennial income to this organization. The income comes in kind of alms and 'Niaz', which the pilgrims offer at these shrines. Of course, the organization is not run on commercial lines, also the money is again spent on their development and protection.

Shrines form a source of livelihood for thousands of people, who live on the mercy of the pilgrims. These people are the custodians of these shrines, and this custodianship is transferred from ancestry to posterity, and has thus remained confined to certain families. These are locally called '*rishis*' and they are

very much honoured and respected by people particularly belonging to the countryside. Near the shrines, small businessmen establish their stalls on the road-sides, where a variety of items are kept for sale. Government make special arrangements for transport and communication. Public health machinery is geared up and first-aid centres are opened in the shrine-complexes. The police force is deployed to overcome any unprecedented situation.

Keeping in view the loyalty and faith of the general public towards the saints, the shrines have received tremendous socio-political and economic significance. Because of their wide geographical distribution, these Muslim shrines have become a powerful force in the valley. It is difficult to give a detailed account of all the Muslim shrines in a comprehensive form and, therefore, in the present paper an attempt has been made to examine a few of them.

1. Hasratbal

Situated at an altitude of 5250 feet, on the western bank of the famous Dal lake, Hazratbal has the geometrical location of $34^{\circ} 5'N$ and $74^{\circ} 5'E$.

This shrine is famous for the holy relic of Prophet Mohammad and therefore considered to be the most sacred to the Muslims, all over Kashmir. The site of the shrine was a garden owned by Saddiq Khan. The relic was obtained by Khawaja-Nur-Din from Syed Abdullah, reportedly the exiled custodian of the Shrine of the Prophet at Medina, and was dedicated to the Muslims of Kashmir.

The holy relic has been deposited in a casket and is displayed to the masses at the below mentioned ten occasions in a year :

- | | |
|---|--------|
| (i) Id-Milad (birth day of) : 12 & 13 Rabiul Awal | 3 days |
| the Prophet and the Following Friday | |
| (ii) Meraj, 27th & 28th Rajab and the | 3 days |
| Following Friday | |
| (iii) Anniversaries of the four Caliphs of | 4 days |
| the Prophet | |

On each occasion a large congregation of people assembles at Hazratbal to offer prayers and to have a glimpse of the holy hair of the Prophet. Each festival is attended by about more than half a million Muslims from all over the Valley, especially from Srinagar. Thousands of stalls are put up by the business community of Srinagar, and sales to the tune of millions of rupees are effected on these festivals.

Towards the end of November 1963, the holy relic was stolen from the shrine. This theft resulted in a big commotion all over the valley. However, it was recovered later on and now it rests in the newly constructed building of the shrine. This building, which is made of marble, was constructed at the cost of Rs. 15 million which took 10 full years to complete.

2. Dastagir Sahab's Shrine

This shrine is situated at Khanyar in the Srinagar city. It belongs to the top ranking Muslim saint of Baghdad, Syed Abdul Qadir Jeelani, whose holy hair lies in this shrine. He is well known in Kashmir by the name of Dastagir (meaning a person who holds out his hand to help others). His reputation of piety and spiritual attainments travelled far and wide all over the world. The saint never visited Kashmir or any part of the sub-continent, but his sanctity brought him so great reputation that people of all countries and communities hold him in high esteem.

The relic is said to have been imported into Kashmir by a tourist from Kabul in 1802 A.D. It was acquired from him by Sardar Abdullah Khan, the then Governor of Kashmir, who presented it to a local saint for being displayed to the people. The shrine is situated on the left side of the Srinagar-Leh Highway, 4 kilometres away from Lal Chowk towards north, at Khanyar Mohalla of the Srinagar city. At this site a festival is held on the 11th of Rabi-u-Sani (4th Lunar month). On this date and the following Friday the holy relic is shown to the public. Actually the festival starts from 1st of this month and lasts for a full fortnight. During this period on each morning and evening there is a heavy rush of pilgrims, who come to offer the morning and evening prayers in the mosque attached to the shrine. On the

11th of Rabi-u-Sani more than one lakh¹⁰ pilgrims attend the festival. The whole vicinity of the shrine is occupied temporarily by stalls put up for sale of vegetables, fruits, books, confectionery, garments and Kashmiri *Manjgool-Puratha*, which the pilgrims take to their homes as *Tabruk*.

3. Khankahi-Mualla

A shrine-cum-mosque situated in Srinagar on the right bank of river Jhelum between the 3rd and the 4th bridges. The site is 4 km in the north of Lal-Chowk. The mosque is named after the renowned Iraqi mystic, scholar, poet, theologian and author Mir Syed Ali Hamdani, popularly known as Shah Hamdan in the Valley. The saint visited the valley three times in connection with the propagation of Islam. He succeeded in bringing about mass conversion and thus changing the whole socio-cultural picture of the Valley. He is said to have burnt 2½ Kharwars *juneos* (equivalent to about two quintals), which were surrendered to him by Hindus, who accepted Islam at his hands.¹¹

The mosque enshrines besides other things, the banner of the Prophet of Islam and a wooden pillar against which he usually reclined in his tent. Both these things were brought by Shah Hamdan to Kashmir. These relics are kept in a repository fitted with glass panes, which has been installed at the outer gate of Hijre Khas, a small room which the saint used for meditation. This room lies to the north-west corner of the mosque. The mosque was previously a temple, which was dismantled after its *sadhus* and *pundits* embraced Islam.

The holy banner and the pillar are taken out from the repository at times of some natural calamity or at odd times like epidemics, droughts, floods, famines etc. These are carried upto *Idd-gah*, a wide open space in Srinagar, in the form of a procession, where special prayers are offered.

At Khankahi Mohalla a festival is organized every year on 6th Zilhij (the 12th lunar month), the anniversary of the great saint. Thousands of Kashmiris attend the festival in order to offer prayers and to recite Holy Quran. This festival lasts for six days *i.e.* from 1st to 6th of Zilhij.

4. Chrari Sharif

(33° 52'N, 74° 49'E)

The locality which is a small town, 35 km to the south of Srinagar, is called *Chrar*. The shrine of Chrar is considered very sacred by Kashmiris, because it entombs the leading *Rishi* of the Valley, Hazrat Sheikh Nooruddin. The saint is popularly known by the name of Sheik-ul-Alam among the Muslims and Nund-Rishi among the Hindus. The Sheikh, born at Kaimuh—a small village on the Srinagar-Jammu road, 26 miles to the south east of Srinagar, in 1377 A.D., was an illiterate person. But with his genius and piety he wielded tremendous influence on all Kashmiris—Hindus and Muslims alike. Most of his poetic verses are at the tounge-tips of Kashmiris. His poetry shows that he was really genius. The Sheikh has toured most parts of the Valley preaching his faith and brother-hood among Kashmiris. At a number of places people have erected shrines in his name. His influence among Kashmiris is so powerful that an Afghan Governor struck coins in his name in 1223 A.D. in order to gain support from the public.¹³ No other saint, perhaps in human history, has ever had coins struck in his name. The great *Rishi* died at the age of 63, and at his death King Zainul Abidin himself was the chief mourner at his funeral.¹⁴ His death anniversary which according to the Kashmiri tradition falls in the month of *Poh* (December) is celebrated at many places, where shrines are associated with his name. But the most important among these is at Chrar, the shrine where the Sheikh himself is entombed. At this place there is the largest congregation of people, where hundreds and thousands of Muslims attend the shrine to invoke the blessings of the saint. On the eve of the festival his wooden chappal, stick etc. are displayed to pilgrims. In the Valley a number of shrines are associated with the Sheikh which are well distributed in the different parts of Kashmir.

5. Shah Zain-ud-Din

At Aishmuqam (74 km in the East of Srinagar 33° 52'N 75° 20'E. Elevation, 2110 Mt).

This is the well known shrine in the Anantnag district where lies the grave of Sheikh Zian-ud-Din, the principal disciple of Sheikh Noor-ud-din Rishi. The saint was a Sikh prince, before his conversion to Islam, belonging to the ruling family of Rajas of Kishtwar.

His anniversary is celebrated on 13th of Baisakh, corresponding to 25th of April every year. Not only Muslims but people from all communities, and from far and wide in the Valley participate. On the evening illuminations are organized in whole of the Lidder valley.

Among the local inhabitants the legend is that after Zainuddin attained spiritual perfection, his master Sheikh Noorud-Din advised him to migrate from Sopore to the cave of Aishmuqam. On his arrival the saint found the entrance to the cave blocked by snakes, and reptiles. He carried with him a club, which he had received from his master. He placed the club on the ground and it soon turned into a dreadful cobra. The snakes in the cave got awestricken and vacated the cave after they surrendered to the saint. These are said to have fled to Puhurpujan, 16 miles to the east of Aishmuqam. Legend says that in that area the snakes and the cobras are non-poisonous because of the miracle performed by the saint, Hazrat Zainuddin. Not only are they non-poisonous but so humble that if one's feet get smothered with milk, the snakes being fond of milk, they would lick the feet but would never bite.¹⁵

6. Islamabad Shrine

(54 Km from Srinagar in South). Lat 33° 44' and Long. 75° 13' (1600 Mt. above sea level)

The shrine is situated in the heart of the town and belongs to Baba Herdi Rishi or Hyder Rishi, popularly known as *Rishi-Moul* (meaning the fatherly Rishi). The Rishi was a disciple of Hazrat Hazma Makhdum, a leading mystic of Kashmir. He belonged to a blacksmith family and was born on 29th Rajab, 909 Hijra. He is said to have spent his whole life in complete celibacy and did not touch meat, fish, onions, garlic etc. It is believed that any one who visits his shrine after having taken mutton, fish or other stimulants invariably meets some sort of

tragedy. The orthodox believers do not take any of these things for about a week's time, when festival is in progress. The festival falls on his anniversary which is celebrated on every 1st of Poh corresponding to 15th December. A large congregation of people assemble in the shrine, which entombs the saint alongwith his 21 disciples.

7. Mukhdum Sahab

The shrine is situated on the south east of the Hari Parbat Hill in Srinagar, 1000 feet higher than the surrounding land. Here lies entombed Hazrat Sheikh Hamza Makhdum (1394-1476 A.D.) one of the leading mystics of Kashmir who wielded powerful influence on the masses. Besides the saint, the body of Baba Daud Khaki, a chief disciple of the saint and once the chief justice of Kashmir, is also entombed in the shrine. The spot of the shrine formed the site, where he used to meditate in seclusion. Later on Nawab Inayatullah Khan, the then Governor of Kashmir, built a mausoleum on the tomb of the saint in 1713 A.D.¹⁷ Hazrat Makhdum and his disciple have converted a large number of people to Islam.

A festival is celebrated on the eve of his anniversary each year on 24th of Muharram (the first Lunar month). Thousands of people from neighbouring countryside and the Srinagar city come over here to offer prayers and seek blessings of the saint. Like the festival of Hazratbal, Khanyar and Charar, the festival of Makhdum Sahab is celebrated with enthusiasm and religious zeal.

8. Hazrat Naqshband Sahab

This shrine is known after the well known *Bukhara* saint and mystic of the Naqashbandi cult, Khawaja Syed Baha-ud-Din Naqashbandi. Actually, he is the founder of this Sufi cult, and has followers in many Muslim countries like Pakistan, Iran, Afghanistan and in India as well. The saint has never visited Kashmir, but his followers in Kashmir made a *Khankan* in his name, in the premises of which one of his descendants Khawaja Moin-ud-Din lies buried in the mausoleum. A festival is organised on 3rd of Kabiul-Awal (the 3rd Lunar month) every year,

the date of death of Khawaja Baha-ud-Din. About 20000 people assemble to offer prayers of *Zohar* (afternoon prayers).

The shrine is also located in Srinagar, just a K.M. towards west of Dastgir Sahab shrine. The premises of the shrine also forms the graveyard of the martyrs of Kashmir who alongwith other Kashmiris, revolted against the repressive policies of Dogra Raj, and were killed on July 13, 1931. Every year on 13th of July, lakhs of people attend this graveyard to pay them homage, which they verily deserve.

9. Aishan Sahab

A shrine constructed over the grave of one of the great scholars of Kashmir. He is Sheikh Yaqub Sarfi, popularly known as Aishan Sahab in Kashmir. The Sheikh is an internationally well known religious scholar, wide traveller, poet, writer, exegetic and a renowned mystic. The shrine is situated near the left bank of the Jhelum, in the close vicinity of the 4th bridge (Zaina Kadal). A festival is celebrated on his anniversary on 12th of Zeeqat (11th Lunar month), attended by about 2000 people especially belonging to the city of Srinagar. On the eve of the festival, the congregational prayers are held in the evening and last till about midnight.

Sheikh Yaqoob was the person, who alongwith Baba Daud Khaki, the chief disciple of Sheikh Hamza Makhdum, went to Hindustan, and took steps to invite Akbar to Kashmir in order to put an end to the internal commotion existing at that time within Kashmir.¹⁹

10. Batmaloo Sahab

The site of the shrine is the Batmaloo locality (named after the saint), 2 km in the south-west corner of the Srinagar city. The shrine entombs Hazrat Sheikh Daud, a disciple of Sheikh Makhdum. Sheikh Daud was a pious man, who was a farmer and used to cultivate his land himself. He raised paddy in his fields, and used to distribute cooked rice, locally called *Batta* every time he visited his fields. That is why he became popular by the name *Batta-moul* a father figure who used to feed the hungry with cooked rice. Batmaloo Sahab is held in high esteem

and is venerated by people living in the surrounding areas. About 5000 people²⁰ visit the shrine at the time of his anniversary, which is celebrated in *Cheet* (12th month of the local calendar).

11. Kulgam Shrine

Lat. $32^{\circ} 39'$ Long. $75^{\circ} 5'$

Elevation ; 1745 Mt.

The shrine belongs to Syed Husain Simnani, where he lies entombed. The site of the shrine is Kulgam, 68 km from Srinagar in the south and 20 Km from Anantnag.

The saint was a migrant from Iraq and had left his native place as a result of the repression to which the Syeds of Iraq were subjected by Taimur—the Lame. Hazrat was an eminent scholar and a mystic of the highest order. He passed away on 11th of Shaban 792 Hijri corresponding to 1389 A.D. but his anniversary is celebrated according to the local calendar, which falls on 13th of *Kartik* (the 7th month). Thousands of people from the rural areas visit the shrine and sales are conducted at a fairly large scale.

12. Bijnbehara

Lat. $33^{\circ} 47'$ Long $75^{\circ} 9'$ Elevation : 1596 Mt.

The shrine is situated in the heart of the Bijnbehara town 45 km in the south-east of Srinagar on the Srinagar-Jammu National Highway. Here rests Baba Neseebuddin reputed for his self-abnegation, who spent his life in building mosques, bath rooms and inns in different parts of the Valley. He did not eat mutton throughout his life and dedicated his life to the services of the poor. For this reason he is also known by the name *Abul-Fuqara* or father of the needy. The festival is celebrated on 13th of Har (3rd local month) every year.

13. Tral Shrine

Lat $33^{\circ} 56'$ Long. $75^{\circ} 10'$ Elevation : 1710 Mt.

The shrine is situated in Tral town, some 40 km in the south-east of Srinagar. Hazrat Syed Mir Mohammad Hamdani

has built it in 1469 A.D. He was son and successor of Shah Hamdan Sahab, the great saint and scholar, whose preachings brought about the mass conversion of people to Islam. The shrine is actually a *Khankah*, known as Khankahi Alla.

Two festivals are held in the shrine. One on the 6th of Zilhij (the 12th Lunar month), and the other on 17th of Rabi-ul-Awal (2nd Lunar month) to celebrate the death anniversaries of the great saint and his son respectively. Thousands of people from Anantnag and Pulwama districts visit the shrine on the day of festivals.

14. Pampur Shrine

Lat $34^{\circ} 1'$ long $74^{\circ} 58'$ Elevation : 1585 Mt. 15 Km South of Srinagar.

The shrine entombs Khwaja Masood with whom many miracles are associated. The saint passed away in 1021 Hijri corresponding to 611 A.D. A festival is celebrated on 5th of Safar (the 2nd Lunar month). He is popular by the name of *Shokh-bab Sahab*.

15. Syed Janbaz Wali

The shrine lies on the left bank of Jhelum in the Baramulla town, having Lat $43^{\circ} 13'$ and long. $74^{\circ} 23'$, 56 KM in the North of Srinagar. The shrine is the mausoleum of Syed Yousuf. Besides being a saint, he was a scholar in religion. People use to call him Janbaz Wali for the reason that the saint is reported to have risked his life to achieve salvation. People assemble in large numbers at the day of his anniversary, which is held in *Rabi-ul-Alwal*.

16. Rishi Sahab

45 Km towards north of Srinagar Lat. $34^{\circ} 5'$ long. $74^{\circ} 26'$. Elevation is 7000' above sea level, 1000 ft. less than that of Gulmarg. The shrine is situated in cool and healthy grassy slopes surrounded by forests.

Rishi Sahab is the popular name of Baba Pyam-ud-Din, a prominent disciple of Sheikh Zain-ud-Din of Aish-muqam.

Rishi Sahab is reported to have belonged to a rich family, and suddenly served all wordly relations and turned into a saint. The shrine is situated in the village Ranbuah about 7 km from Gulmarg. A number of huts and buildings have been constructed in the premises of the shrine, in order to accommodate the multitude of pilgrims, who are provided free board and lodge there.

The saint has died in 1475 A.D. and his death anniversary falls in Poh (December). The festival is attended, not only by Muslims, but also by a large number of Hindus, who usually visit the shrine to take a vow to dedicate some object or objects if their prayers are granted.

17. Syed Naqash Bandi Sahab

Very close to the Manasbal lake, the shrine is situated in Sumbal, having Lat. $34^{\circ}14'$ and long $74^{\circ}41'$, 16 km away from Sopore. Syed Hilal, a Muslim Saint of Naqashbandi cult is entombed here. The saint is very famous for his religious piety and scholarship. His death anniversary falls on 15th of Safer (the second lunar month of Hijri calendar), and is celebrated by a large number of Muslims from both urban and surrounding rural areas.

18. Saah Qalander at Wuttalar

A village in Ganderbal tehsil. Shah Sahab has been a 'Qalander' in the sense that he attended prayers five times a day, recited Quran and observed fasting, but would indulge in smoking opium (charas), shaving of beard and according to some drank wines as well. He is venerated by thousands of devotees from the city and countryside, who attend his festival, conducted on the last date of *Ziqad* (the 11th lunar month).

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Population Distribution of Jammu & Kashmir—A Regional Analysis

BUPINDER ZUTSHI*

THE study of population distribution and its characteristics is assuming greater and increasing significance not only in India but all over the world. Demographic attributes of an area tend to reflect the institutional development, which in turn interact with environment and develops technological know-how for maximum utilization of the existing resource base. Thus the study of population is likely to disclose a variety of social and other developmental activities that an area has achieved.

The demographic attributes of Jammu & Kashmir State has to be studied properly, as the environmental constraints as well as large scale social and economic diversities among the spatial units of the state exhibits sharp contrast. Demographic characteristics, such as distribution and its composition, in a dominantly agricultural-cum-pastoral region, with weak trade links carries a strong impress of environmental constraints.

An attempt has been made in this paper to examine the population distribution, their rural urban differentials, sex composition, literacy rate and industrial composition of workers in the homogeneous geographical regions of the state. The study

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would help to determine the man-nature interaction in geographically distinct regions of the state. The study has been attempted on the eight regional units comprising of the following tehsils (Table 1).

The above regionalization scheme was arrived at, while considering the physiographic landscape, resource distribution and cultural characteristics. Keeping in view the above criteria, the state of Jammu & Kashmir can be divided into eight micro regions exhibiting its own geographic peculiarities imparting to it a geomorphic personality of its own.

TABLE 1

Regionwise Administrative Units

1981

<i>S. No</i>	<i>Region</i>	<i>Name of Tehsils</i>
1.	Jhelum Valley Floor	Anantnag, Bijbehara, Doru, Baramulla, Sonawari, Sopore, Pulwama, Kulgam, Handwara, Srinagar.
2.	Karewa	Chadura, Badgam, Beerwah, Bandipore, Tral.
3.	Side Valleys	Kupwara, Karnah, Gulmarg, Pahalgam, Shopiyan, Ganderbal, Uri.
4.	Jammu Plain	Kathua, Jammu, Hiranagar, Samba, Ranbirsinghpora, Akhnoor, Bishna.
5.	Pir-Panjal	Haveli, Mendhar, Budhal Gool-Gulabgarh, Ramban Doda, Kishtwar, Bhadarwah.
6.	Siwaliks	Udhampur, Basoli, Billawar, Ramnagar, Chenani, Reasi, Nowshera, Kalakote, Rajouri, Sunderbani.
7.	Zanskar Valley	Kargil, Zanskar
8.	Ladakh	Leh.

(i) *Jhelum Valley Floor*

The Jhelum Valley Floor includes the flood plains and *bahil* tracts. It extends from Khanabal in the south east towards Baramulla in the west. The region has thick cover of soil bed, which is further enriched by continuous deposits through the tributaries of river Jhelum. The region contains the "Rice bowl of Kashmir". The summer conditions are for longer period of time as compared to other regions within the Valley of Kashmir.¹ The region has well developed transport network distribution. All important urban centres are concentrated in this region. Important crops of this region are paddy and fruits. The region has rich tourist potentials. The region has limited interactions with the rest of the country during winter.

(ii) *Karewas*

The Karewa region is a zone of uplands, which have been formed due to lacustrine deposits. It includes the sloping Karewas from Shopiyan to Sopore, all along the foot-hills of Pir-Panjals and north Kashmir Range. Some of the Karewas are markedly flat topped. This region is contrastingly infertile due to the presence of large scale conglomerate deposits.² The region is one of the regions of scarcity in terms of water supply. Hence only dry farming like horticulture activities are possible. Transport network is underdeveloped. The region lacks most of the natural resources, like soil, forests and water resources. Small scale handicraft activities are dominant and the only source of livelihood during winter months. Some areas in certain pockets have been devoted for saffron cultivation.

(iii) *Side Valleys*

The Side Valley region includes the areas carved out by the important tributaries of river Jhelum. The region has undulating slopes and the valleys are very narrow. The region provides enormous potentials for tourist development. The soil is immature due to less insulation and temperature, hence the area is not suitable for cultivation. However dry crops, like maize and barley are grown during summers. The economic base is dependent on pastoral activities. The climatic conditions are com-

paratively harsh with long winter and spring seasons as compared to the Valley Floor and Karewa. Transport network accessibility is inadequately developed owing to the rugged topography and prolonged winters.

(iv) *Jammu Plains*

This region forms the second most economically developed region of the state. Its opening into the Sindhu-Ganga Plains distinguishes it from the isolated Valley of Kashmir. The region has summer conditions for nearly nine months like the other areas in the Ganga Plains. It is agriculturally the richest belt of Jammu Division. Important crops are wheat and rice. It also constitutes large proportion of towns located in the Jammu division. The regions have very high proportion of Hindu population.

(v) *The Siwalks*

It consists of the forested and furrowed hills enclosing the structural depression like Duns.³ The region is agriculturally poor due to limited means of irrigation and eroded soil. Maize, millets and barley are the main crops. The agricultural activities are still in the subsistence stage. Settlements are sparsely distributed. Climatically the region resembles to that of the Jhelum plains.

(vi) *The Pir-Panjals*

The region is located in the higher elevations between 2500 metres to 4500 metres.⁴ It has bare scrap faces and forest-clad tops. It is prone to seasonal snowfall. Primitive subsistence herding is the main economic activity. It provides access to the Valley of Kashmir only through passes namely the Banihal and Pir-Panjal.⁵ Due to prolonged winter conditions, agricultural activities are absent. Population living in the higher elevations are mostly migratory in nature. Settlements are sparsely distributed.

(vii) *The Zaskar Range*

The region lies in the north of Kashmir receiving comparatively higher rainfall than its counterpart in the Ladakh. Its flood

plains grow some vegetation, the higher up areas grow patches of grass which support the yaks and wild asses. The region remains isolated from the Valley of Kashmir during winter months, due to heavy snowfall. Winters are harsh and long, which restricts agricultural growth. It is the coldest region of the state. Culturally the region exhibits sharp contrast with Ladakh as the regions has large share of Shia Muslim population.

(viii) *Ladakh Region*

The region is located in the northern most part of Jammu and Kashmir state in the higher elevation area more than 5000 metres. Due to dry climatic conditions agricultural activities are restricted all along the Indus river. The region is very inhospitable for human occupation. Grazing and pastoral activities are carried on favourable slopes. Ladakh is the land of Buddhist culture.⁶ The region occupies significant strategic position due to surrounding border areas of Pakistan and China. Settlements are very sparsely distributed, and their population size is small. Pastoral and other defence activities are the main sources of income.

Population Distribution

The population of Jammu & Kashmir state according to 1981⁷ census was 5,95,4009 persons, registering a growth rate of 28.95 percent during 1971-81 decade. The distribution of population among the regional units depicts highly concentrated pattern in the agriculturally rich regions of Jhelum Valley Floor (33.44 percent) and Jammu Plains (19.41 percent), on the other hand, as expected very low concentration was found in the Ladakh and Zaskar regions of the state (Table 2).

Table 2 indicates that population distribution in Jammu & Kashmir State is concentrated only in those regions where, productivity of agricultural areas and carrying capacity of land is high. The other factors for such concentration could be attributed to limited scope for the development of heavy industries as the state is poorly endowed with mineral

TABLE 2

Regional Distribution of Population—1981

	% of Popn. to total state popn.	% of Assessed area* to total area	Gross Den- sity** per Sq. Km.	Growth rate 1971- 1981
1. Jhelum Valley				
Floor	33.44	11.42	461	+26.44
2. Karewa	8.76	2.84	484	+38.86
3. Side Valley	10.35	3.84	423	+27.63
4. Jammu Plains	19.41	11.30	269	+28.44
5. Siwaliks	12.45	18.37	106	+31.98
6. Pir-Panjals	13.33	17.68	118	+29.29
7. Zaskar	1.08	21.26	8	+21.70
8. Ladakh	1.13	13.27	13	+30.25
Kashmir Division	52.57	18.08	457	+28.49
Jammu Division	45.20	47.36	157	+29.69
Ladakh Division	2.21	34.56	10	+25.99
Jammu & Kashmir	100%	(5954009 Persons)	100% 157 37807 Sq. Kms.	+28.95

*This refers the assed area as per the Revenue Record?.

**Number of persons per square kms. of assessed area.

resources. Moreover due to limited technological development, the state has not yet fully harnessed the other natural resources. The state being in the womb of Himalayas has limited trade linkages with the other parts of the country. All the above factors have contributed in the concentration of population in agriculturally rich areas of Jhelum Valley floor and in the plains of Jammu division. As expected sparse population distribution was found in both the regions of Ladakh Division.

The distribution indicates, the rigid nature of environmental constraints on the population distribution. The concentration of population has close association with the alluvial strips all along river Jhelum in the Kashmir Division. Regions with difficult terrain and harsh climatic conditions like, Zaskar, Ladakh, Karewa, Siwaliks and Pir-Panjal have sparse distribution of population. This could be attributed to the less growing season, infertile soil and limited irrigation facilities.

Density of Population

The gross density of population again reflects marked variations among the regions of Kashmir, Jammu and Ladakh Division. The gross density of population depicts close association with the carrying capacity of agricultural land. All the three regions of Kashmir Division registered very high density. On the other hand Ladakh Division registered very low density of population due to severe climatic condition, which restricts the agricultural activities only to a few pockets. Among the regions of Jammu Division wide variations were observed between Jammu plains and the other two regions. This again testifies the strong control of environmental indicators on the distribution of density of population, especially in those areas where, the technological development is still in the infancy stage.

Growth rate of Population

The decadal growth of population in the state is directly the outcome of births and deaths, as migration of people is very limited in the state. The state on the whole registered a decadal growth of 28.95 percent which was comparatively higher than the national average of 24.81 percent during the same decade. The regionwise distribution reflects very high decadal growth for the Karewa, Ladakh and Pir-Panjal. This could be attributed to the sharp decline of deaths on one hand and more or less constant birth rates on the other. The births have not declined due to dependance on pastoral and horticulture activities, which requires more manpower. Moreover, the institutional development of these regions are still in the low ebb, hence the techniques of controlling population have not been adopted.

Jhelum Valley Floor being predominantly agricultural belt showed decline of births due to heavy pressure on the agriculture lands. Zanskar region registered the least growth rate due to excessive deaths especially that of infant. This region is socially and economically most backward, due to its isolation from the mainstream for nearly eight months. The decadal growth rate of population again indicates the strong influence of agricultural development, social development, and environmental control,

Characteristics of Population

Among the characteristics of population, sex composition, literacy rate, urban distribution of population, participation rate and industrial classification of workers was worked out to highlight the social and economic conditions among the regional units.

TABLE 3

Characteristics of Population—1981

S. No.	Region	Sex Ratio		Literacy Rate		% of U. Popn. to total	% of U. Popn. to total U. Ppn.
		Total	Male*	Female**	%	Popn.	U. Ppn.
1.	Jhelum Valley	885	26	72	28	45	53.02
2.	Karewa	874	18	80	20	12	4.81
3.	Side Valley	863	16	84	16	7	3.25
4.	Jammu Plain	936	42	63	37	27	25.00
5.	Siwaliks	925	26	71	29	9	5.00
6.	Pir-Panjals	904	18	80	20	5	3.00
7.	Zanskar	896	17	91	9	5	0.27
8.	Ladakh	901	24	77	23	12	0.63
	Kashmir Division	879	23	75	25	32	66.10
	Jammu Division	923	30	68	32	15	32.98
	Ladakh Division	899	21	83	17	9	0.91
	Jammu & Kashmir	899	26	71	29	21	100%
		(1558247)					(1250611)

*Male and Female literacy rate was worked to total literates.

**Sex ratio in females per thousand males.

Sex Composition

Sex ratio is determined by a large number of bio-social factors which include the differential death rates among the two sexes and the sex selective migration of the population.⁴ One observes high degree of association between high sex ratio and

socio-economic development, especially in those areas where sex selective migration is absent. Jammu & Kashmir State has not witnessed large scale sex selective migration streams, hence this is a powerful indicator which depicts the social and institutional development of the region.

The state registered very low sex ratio (899) as compared to the national average of (935), reflecting social and institutional backwardness of the state. This low sex ratio of the state could be attributed to high mortality rate among females. Large scale variations in the sex ratio was observed among the three divisions of the state. Kashmir Divisions registering very low sex ratio (879) and Jammu Division very high (923). Ladakh registered more or less the same sex ratio as that of the state. This reflects very close association of sex ratio with the religious composition of population. Areas having large share of Muslim population showed very low sex ratio as in Kashmir Division, Zaskar region and Pir-Panjal region. The Hindu and Buddhist dominated areas of Jammu plain, Siwaliks and Ladakh on the other hand registered comparatively high sex ratio.

Table 3 also indicates a close association of high sex ratio with the female literacy rate. Higher sex ratio for Pir-Panjal region is explained to a large extent by male selective migration, who are dependent on pastoral activities. Thus sex ratio distribution in state shows close association with the female literacy rate and the religious composition of population, indicating high female mortality rate among Muslim population.

Literacy Rate

Literacy rate is a very powerful indicator of development. It reflects the level of modernization of the people, that enables them to utilize the resource base of the area more effectively. Literacy rate in the state of Jammu & Kashmir is very low due to the poor social awareness, low level of urbanization and industrialization. The state registered literacy rate of 26.00 percent, which is fairly low compared to the national literacy rate of 36.00 percent. This reflects a weak social institutional set up of the state, contributing to low level of technological development, which in turn effects the low utilization of resources. The regional distribution of literacy rate again indicates strong impact of

cultural factors as the Hindu dominated regions depict high literacy rate. Jhelum Valley Floor also registered comparatively high literacy rate. This could be attributed to the presence of the largest urban centre of the State in this region. Literacy rate was very low in the isolated and hilly areas of Zanskar, Karewa, Side Valley and Pir-Panjal. Jammu plains on the other hand registered very high literacy rate, possibly due to strong linkages with the plains of the country. Thus the distribution of literacy rate in the state shows strong impact of religious composition, urbanization rate and rigid environmental control.

The distribution of female literates to total literates in the state again reflects high distribution among Hindu dominated areas of Jammu plain and Siwaliks. Female literates to total literates was found to be the lowest in Zanskar region which may be due to large scale social underdevelopment of the region.

Urban Population Distribution

Urbanization is one of the powerful indicator of measuring social and economic development of an area. An increasing level of urbanization is an important index of industrialization and overall economic development. Urbanization is not only desirable but also essential for generating economic growth and social changes.

Jammu and Kashmir state registered 21 percent of its population in the urban areas as compared to 23 percent for the nation as a whole. The regionwise distribution of urban population registered very high distribution in Jhelum Valley Floor followed by Jammu Plains. The rest of the regions registered negligible urban population. This reflects an unbalanced distribution of urban centres reflecting large scale disparities. The physiographic conditions, weak trade linkages and underdeveloped technology have created concentrated urban centres of Srinagar in the Jhelum Valley and Jammu in the Jammu Plains. The concentration of urban population to total urban population of the state again indicates very high concentration in Jhelum Valley Floor (58 percent), followed by Jammu Plains (25 percent). Rest of the regions together account for less than 20 percent of the urban population.

This weak urbanization in the other regions of the state could be attributed to :

- (i) Very low level of inter-sectoral diversification in the economy, due to poor technological development. Hence the regions have preponderance of primitive subsistence economic activities.
- (ii) The pastoral and horticulture activities are weakly developed and highly localized, due to the primitive techniques, which are still prevalent in large areas.
- (iii) Industrialization, based on the agro/pastoral and horticulture resources base is still in the rudimentary stage.

TABLE 4

Participation Rate and Industrial Classification of Workers—1981

S. No.	Region	% of Workers total Popn.	Cultivators %	Agr. Lab. %	H.H. Ind. %	Other workers %
1.	Jhelum Valley	30.25	46.25	3.09	10.00	41.00
2.	Karewa	33.02	60.00	2.34	12.00	26.00
3.	Side Valley	30.73	69.00	5.10	5.00	20.00
4.	Jammu Plain	26.12	46.00	6.59	2.00	46.00
5.	Siwaliks	30.16	71.00	1.09	1.38	26.00
6.	Pir-Panjals	30.57	79.00	3.25	1.58	16.00
7.	Zanskar	45.38	79.00	3.16	.75	17.00
8.	Ladakh	44.07	59.00	3.16	1.76	31.00
	Kashmir Division	31.56	52.64	3.38	8.94	35.04
	Jammu Division	28.73	63.52	3.93	1.66	30.89
	Ladakh Division	44.78	69.05	5.98	0.98	23.99
	Jammu & Kashmir	30.08	57.85	3.71	5.56	32.88

Participation Rate

The total population of an area is sub-divided into two aspects, the economically active and in-active population. The economically active group is called as labour force or working population. Larger the size of workers, greater is the generating demand and an increase in services.¹⁰ This increasing demand

ultimately stimulates the process of economic development within a region. However, a large number of labour force in the agricultural economies cannot be considered as a positive indicator, as most of the labour force is either underemployed or are disguised employees, and are highly unproductive. Socially underdeveloped areas also tend to have high participation rate due to the prevalence of child labour. The size of participation rate is also dependent on population growth rate, age structure, sex ratio and other demographic indicators.

The state of Jammu and Kashmir being predominantly agrarian, showed high participation rate (30.08 percent). As expected regionwise participation rate (Table 4), reflects large share of workers in the agriculturally rich belts as well as in those areas where, pastoral and horticultural activities are prevalent. Jammu Plain regions having high literacy rate showed low share of workers. The regions of Ladakh Division registered very high participation rate, due to a number of reasons ; namely, being one of the strategic area in terms of defence, most of the workers are porters for transporting food and necessary items for the army personnel. Due to social under-development infant mortality rate is very high in the Zaskar, thus age structure of population is mostly in the young age group. Although the workers are comparatively more, yet the productivity is in the subsistence stage. Karewa region registered the highest participation rate in the Kashmir Division.

Industrial Classification of Workers

The size of labour force and their distribution in various economic sectors, is highly relevant to the productivity and the economic development of any region.¹¹ Participation in specific sectors imposes specific patterns on the lives of participants, effects the kind of enterprise, as well as their social and economic awareness towards the natural environment. As the process of development moves, there is movement of labour force away from the agricultural sector, and a corresponding increase in the proportion of secondary and tertiary activities.¹²

The state of Jammu & Kashmir registered 62 percent of the total workers in the primary sector, 6 percent in the household

industries and 32 percent in other activities. This clearly indicates the dependence on the primary activities, due to underdevelopment of institutional and technological factors. The regionwise distribution, however, reflects that except for two regions of Jhelum Valley Floor and Jammu Plains all other regions have very high share of primary workers. The distribution of agricultural labour in the state is very low as compared to the national average. This could be attributed to the enforcement of Land Distribution Act. However, the size of farms is very low due to this distribution process. Jammu Plains and Side Valleys registered slightly more agricultural labourers.

The distribution of household industrial workers among the regions of the state indicate dominance only in the three regions of Kashmir Division. Other regions of the state both in Ladakh and Jammu reflects very low distribution of workers in this industry. Karewa and Jhelum Valley have the largest percentage of workers engaged in this industry. This could be attributed to the presence of Srinagar town, which provides large scale market. Most of the workers are employed by some industrial establishments located in the urban areas of the Valley Floor on piece wage basis. Due to non-availability of cultivable area in the Karewa regions, most of the population is working in small scale handicraft industrial activities for the whole year.

Thus the situation of economic scene in terms of industrial activities in the state is very much below the mark, and hence most of the workers are still dependent on primary activities. The distribution of industrial activities in the regions of Ladakh and the hilly regions of Jammu are more or less absent. Thus the economic development of these regions are still in the primitive stages. Efforts must be made to harness the resource base of these regions like forests, pastoral activities and horticulture activities.

The distribution of other workers in the state, again reflects the dominance in only two regions namely, Jammu Plain and Jhelum Valley. However, some workers working in other activities are also in the Ladakh region. Most of these workers are employed as porters on part time basis in the defence services. Some allied activities related to tourism have also started in the region. But these are also restricted during summer months.

The distribution of other workers in Jammu Plain and Jhelum Valley could be attributed to the presence of two super cities of the state namely Srinagar and Jammu. They serve as summer and winter capital of the state. Hence all the administrative activities are concentrated in these two cities. Moreover, most of the big industrial establishments are also located in these two towns. Some industrial establishments have developed in Jammu city due to the opening of Jammu-Pathankot railway linkage. Similarly some industrial establishments like H.M.T. factory, Silk factory, electronic industry have also developed in the vicinity of Srinagar city. However, the industrial establishments located in these two regions provide job opportunities only in the adjoining hinterlands.

The other regions of the state have very few workers engaged in the other activities. Most of these workers are concentrated in the tehsil headquarters of these regions. The distribution of these workers was exceptionally low in the regions of Side Valley, Pir-Panjal and Zanskar, reflecting strong environmental determinism.

Conclusion

The study on the population distribution and characteristics of population in the State of Jammu and Kashmir leads to the following main conclusions.

The distribution of population in the state reflects marked variations in the regions of the state. Large concentration of population was registered in the agriculturally rich belts of Jhelum Valley and Jammu Plains. Other regions have negligible distribution of population. This indicates strong influence of environmental indicators on the distribution of population. The density of population distribution also indicates very close association with the development of agricultural activities as all the three regions of Kashmir Division and Jammu Plains registered very high density as compared to other regions.

The distribution of growth rate of population and other social development indicators like sex ratio and literacy rate indicate strong association with the religious composition of population. Sex ratio and literacy rate was very high for Jammu

regions where the Hindu population is large. The regions having large share of Muslim population in all the three regions registered very low sex ratio and low literacy rate. However, Jhelum Valley also registered high literacy rate due to the presence of Srinagar city which accounts for nearly 20 percent of the population of the Valley. Thus the state has institutional and technological backwardness. The distribution of urban population in the state is highly concentrated in two regions of Jhelum Valley and Jammu Plains. Thus the state has large scale disparities as the benefits of urbanization has trickled only to the adjoining hinterlands of the two regions.

The economic base of the state as indicated by the industrial classification of workers, is dominated by primary workers. Other workers are again concentrated only in two regions of Jhelum Valley and Jammu Plains.

In order to stimulate the economic and social development of the state, the development of industrial activities should be streamlined. This could provide permanent source of income to the population. This could be achieved by opening small scale industries in different regions based on agriculture, pastoral, fruitcanning, handicrafts forest based and, woollen based raw materials.

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Urbanization in Jammu and Kashmir State : A Regional Analysis

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THE State of Jammu and Kashmir constitutes three distinct Geographic regions, namely, Jammu, Kashmir and Ladakh which differ widely from each other in terms of their physical framework, socio-economic conditions, religio-cultural and even in political conditions. It would be rather worthwhile to study the urbanization of these regions separately because of the fact that the process of urbanization, the pattern of urban growth and distribution and the correlates of urbanization also differ greatly.

The overall urbanization trends of the state show that it has altogether 56 urban centres¹ of different size classes with 21 percent urbanism. This level of urbanization shows an increase of about 2.41 percent over 1971 census. In absolute numbers, the total urban population of the state increased from 858221 in 1971 to 1,260,403 in 1981 which in other words may be equated with total population of one urban agglomeration of Srinagar.

The distributional pattern of the towns shows that the Jammu region concentrates as many as 31 towns while the

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Kashmir region absorbs 23 towns followed by 2 towns in the Ladakh region. But when we see the distribution of urban population we find a striking feature. Of the total urban population of the State, Jammu region only constitutes 33.33 percent while the Kashmir region accounts for nearly two times larger than that of Jammu region (65.70) percent. The Ladakh region only records a negligible share (0.97 percent).

The urban occupational structure at regional level reveals an interesting feature that the Jammu region experienced a declining trend of population in primary sector i.e., from 23.60 percent in 1961 to 21.17 percent in 1971, while the level of concentration is comparatively higher in the Kashmir region, i.e. 30.97 percent in 1961 to 33.58 percent in 1971 and showed an increasing trend of engagement in primary sector. The situation in the Ladakh region was more on the upper limit than in 1961 the percentage of population in primary sector was comparatively much higher (52.38 percent) than in 1971 census (38.62 percent). In other words, the engagement in primary sector increased gradually as one proceeds from Jammu region to Kashmir region and from the Kashmir region to the Ladakh region. It is obvious that regional linkages matter much more in getting the population engaged in secondary and tertiary sectors. The data, however, reveals that in secondary sector, the Jammu region had an edge over the Kashmir region. The Jammu region recorded slightly lower percentage from 15.23 percent in 1961 to 16.98 percent in 1971 than that of the Kashmir region from 16.39 percent in 1961 to 18.03 percent in 1971. The Ladakh region had comparatively very less concentration but showed a declining trend, i.e., from 22.14 percent in 1961 to 11.90 percent in 1971. In tertiary sector, the situation in Jammu region was better than that of the Kashmir region. It may be mentioned that in 1971, the Kashmir region and the Ladakh region had more or the less equal percentages in tertiary sector.

In the following pages, we shall analyse the urbanization characteristics at regional levels and also explain some of the causes of urban problems.

1. The Jammu Region

The Jammu region covering an area of about 26,395 sq

Km² forms a distinct geographic region which may be subdivided into the foothill plains, the Siwalik region and the lesser Himalayas or the Pir-Panjal region.³ The towns which lie in the foot-hill plains are, namely Jammu, Kathua, Hiranagar, Samba, Arnia, Bishna, R.S. Pora, Akhnoor Vijaypur, Baribrahmana, Lekhanpur, Parole while in the Siwalik region the towns are situated, namely, Basohli, Billawar, Ramnagar, Rehanbal, Udhampur, Chenani, Katra, Reasi, Nowshera, and Rajouri. In the Pir-Panjal region, towns are dispersed namely, Doda, Bhaderwah, Batote, Ramban, Banihal, Kishtawar, Poonch and Thannamandi. One of the remarkable phenomena may be noted here that those towns being situated on either of the intensively transportation flow lines or perennial rivers bear ample scope of future growth as compared to those which are located in an isolated region, e.g., Doda-Kishtawar region.

The region has altogether 31 urban centres of different size classes but majority of the towns is small and urban villages. These towns have experienced either stagnant urban growth of steady growth or even have declining trend of growth. It is an obvious fact that in the mountainous region, there exists very little potentialities of urban growth. It may be noted that the towns which having high degree of interaction with the adjoining developed urban regions have experienced continuous and consistent growth as compared to those towns which are situated in isolated regions have experienced waverly growth.

The problem of inaccessibility, the altitudinal factors, climatic conditions, relief characteristics and bordered State are some of the major and minor issues which come in the way of urban growth and development. The explanation lies in the fact that the whole region is mountainous and is bordered by International boundaries.

(i) *The Distributional Characteristics of Towns*

As has been stated earlier out of 31 towns, 12 towns are spread over in the foothill plains; 11 urban centres are dispersed in the Siwalik region and the remaining 8 urban centres are scattered in the lesser Himalayas. A sizeable number of towns is well situated either along the river channels or along the river

channels or along the major transportational lines, namely, Jammu, Udhampur, Kathua, Ramban, Batote, Banihal, Rajouri and others which grew rapidly because of their locational characteristics. The towns having lesser degree of accessibility and connectivity with the adjoining regions, however, have not recorded the fast growth, *e.g.*, Doda, Kishtwar, Bhaderwah and Poonch.

The Table 1.1 shows a striking feature of distributional patterns of Towns by districtwise. The Jammu district is highly urbanized in the region with about 66.57 percent population living in 8 urban centres. Of the total urban population of the region, Jammu urban agglomeration alone constitutes, 53.17 percent which shows a tendency towards the formation of a primate city. Moreover, this sort of polarization concentration process would dwarf and other towns of the region to a great extent. The remaining other districts, viz., Udhampur, Kathua and Doda are comparatively less urbanized with 10.30 percent, 9.99 percent and 5.99 percent respectively with only 6 towns in each district. However, the least urbanized districts in the region are Rajouri and Poonch which constitute only 3.77 percent and 3.38 percent respectively.

TABLE 1.1
Jammu Region (1981)
Distribution of Urban Population

<i>District</i>	<i>No. of Towns</i>	<i>Urban Population</i>	<i>% of the total urban population</i>
Doda	6	25,174	5.99
Udhampur	6	43,247	10.30
Kathua	6	41,990	9.99
Jammu	8*	279,644	66.57
Rajouri	4	15,833	3.77
Poonch	1	14,171	3.38
Jammu Region	31	420,059	100.00

* Jammu urban agglomeration is taken as a unit.

The urban distribution by size classes-cum-urban status also shows a significant feature. The distribution of population in all over 31 towns is highly uneven. Of the total urban population, only one single city accounted for as much as 53.17 percent, while 2 medium towns recorded at only 11.08 percent. The situation is further deteriorated when urban villages constituted 14.45 percent and 16 urban hamlet for only 11.60 percent (Table 1.2). This disparity among the towns which reveals that bigger the towns the higher the percentages, smaller the towns the lower the percentages. But this trend of disproportion which is not a healthy sign for regional urban development, however, suggests that a process of concentration polarization with its key attributes of manufacturing industry, tertiary activities, trade, transport and other services is in the offing. For regional urban growth and development, medium towns and small towns are growingly needed for their encouragement which is addition to other measures of development, disfunctionalization of important activities may solve some of the problems.

(ii) *Urban growth during census decades*

In the initial stage, the region had only one town in 1901, the proportion of urban population to the total population was highly low (3.44 percent). The region as a whole had experienced a slower growth except during the census period of 1911-1921 despite of the fact that the natural calamities, large scale epidemic disease and moreover definitional change in the towns had substantially reduced the total urban population so much so that it recorded a negative growth (-6.47 percent). Consequently, it recovered the loss and recorded a positive growth by 25.86 percent during the subsequent decade. However, since 1931 census decade, there was a steady but consistent growth till 1951. It was during the post-independence period that the region had recorded a rapid growth (47.92 percent) due to the Five Year Plans which brought about a radical change in the socio-economic conditions, particularly with the coming of the railways in the foothill plains of the region and with the construction of National Highway with two-way-traffic system. It is hoped that urban growth would considerably accelerate when the project work in the extension of railway line upto

TABLE 1.2
Jammu Region
Urbanization trends—Distribution of towns and urban
population by size classes (1901—1981)

Size class- cum-status	Number of towns								
	1901	1911	1921	1931	1941	1951	1961	1971	1981
City (100,000 and above)	—	—	—	—	—	—	1	1	1
Large Towns (50,000-99,999)	—	—	—	—	1	1	—	—	—
Medium Towns (20,000-49,999)	1	1	1	1	—	—	—	—	2
Small Towns (10,000-19,999)	—	—	—	—	—	—	—	2	3
Urban villages (5,000-9,999)	—	2	2	2	2	2	1	7	9
Urban Hamlets (5,000 and below)	—	15	10	11	11	11	19	14	16
Total	1	18	13	14	14	14	23	25	31
Size class- cum-status	Percentage of total urban population in each size class								
	1901	1911	1921	1931	1941	1951	1961	1971	1981
City (100,000 and above)	—	—	—	—	—	—	56.51	56.92	53.17
Large Town (50,000-99,999)	—	—	—	—	56.66	60.45	—	—	—
Medium Towns (20,000-49,999)	100	44.85	47.62	51.39	—	—	—	—	11.08
Small Towns (10,000-19,999)	3	—	—	—	—	—	10.68	16.13	9.70
Urban villages (5,000-9,999)	—	18.10	18.29	16.09	13.66	12.31	5.03	14.08	14.45
Urban Hamlets (5,000 and below)	—	37.05	34.09	32.52	29.68	27.24	27.78	12.87	11.60
Total	100	100	100	100	100	100	100	100	100

*Jammu urban agglomeration is taken as a unit.

Udhampur is completed. On the whole, the region has recorded a net growth of 1062.6 percent during 1901-1981 which is considered to be one of the highest growth percentage in India at regional level (Table 1.3).

TABLE 1.3

Jammu Region (Urban growth 1901-1981)

<i>Year</i>	<i>Urban population</i>	<i>Decadal variation</i>	<i>Decaded Growth</i>	<i>% to the total population</i>	<i>No. of towns</i>
1901	36,130	...	...	3.44	1
1911	70,742	+34,612	+95.80	6.56	18
1921	66,161	-4,581	-6.47	5.94	13
1931	83,272	+17,111	+25.86	6.88	14
1941	103,867	+20,595	+24.73	7.73	14
1951	138,227	+34,370	+33.08	9.48	14
1961	191,574	+53,347	+38.59	12.18	23
1971	283,972	+92,398	+48.23	13.68	25
1981	420,059	+136,087	+47.92	15.45	31
(1901-81)		383,929	(1062.6)		

Jammu U.A. is taken as a unit.

In absolute terms, if we analyse the net growth of towns during 1901-1981 in Table 1.4 we find that a sizeable number of towns have recorded high percentage since classified as towns, namely, Udhampur (870.62) Ranbirsingh Pura (682.50), Jammu (518.20) and Kattrra (452.29). The towns having below 100 per cent net growth are as follows: Basohli, Arnia, Ramnagar, Poonch, Bishna, Batote and Nowshera—which all show that there exist little potentialities of urban growth except Batote which is situated at an altitude of about 1540 metres and receives high amount of snowfall during the winter season.

The pattern of relative urban decadal growth shows a striking feature. For example, during the two consecutive census decades 1901-11 and 1911-21, a number of towns experienced a negative growth, namely, Akhnoor, Basohli, Jammu, Kathua Poonch and Ramnagar. Subsequently, all these towns grew

TABLE 1.4

Jammu Region

Pattern of Urban Growth during the Census Decades 1(decrease); + (increase)

Towns (1981)											Net growth since first time classified as towns
	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81			
1. Akhnoor	—	-4.22	+3.51	+13.00	+6.47	+6.11	+38.92	+26.03			+120.94
2. Arnia	—	—	—	—	—	—	+52.76	+29.16			+97.31
3. Banihal	—	—	—	—	—	—	—	6.57	+119.92		+106.23
4. Basohli	—	-2.08	+9.30	+13.91	+14.41	+4.22	+27.61	+17.10			+98.31
5. Batote	—	—	—	—	—	—	+30.34	+15.69			+50.79
6. Bhaderwah	—	+1.56	+11.22	+3.25	+19.07	+16.02	+26.25	+16.58			+137.03
7. Bishna	—	—	—	—	—	—	+33.60	+32.77			+77.39
8. Chenani	—	—	—	—	—	—	—	3.13			+103.60
9. Doda	—	—	—	—	—	—	+39.61	—	28.34		+331.30
10. Hiranagar	—	—	—	—	—	—	+31.09	+28.34			+331.33
11. Jammu	-12.19	+0.69	+35.83	+37.51	+41.98	+29.57	+49.40	+38.18			+518.20
12. Kathua	—	-3.20	+3.37	+6.54	+36.34	+26.67	+80.53	+35.57			+350.61
13. Katra	—	—	—	+5.79	+26.07	+20.68	+116.81	+37.94			+452.29

<i>Towns (1981)</i>	<i>1901-11</i>	<i>1911-21</i>	<i>1921-31</i>	<i>1931-41</i>	<i>1941-51</i>	<i>1951-61</i>	<i>1961-71</i>	<i>1971-81</i>	<i>Net Growth since first time classified as towns</i>
14. Kishtawar	—	+7.06	+30.99	+3.00	+13.97	+12.28	+27.44	+35.97	+201.68
15. Lakhadpur	—	—	—	—	—	—	+40.32	+88.64	+164.69
16. Nowshehra	—	—	—	—	—	—	+25.15	+15.66	+44.75
17. Poonch	—	-7.11	+16.03	+5.57	+9.22	+8.44	+17.51	+18.28	+87.35
18. Rajouri	—	+2.78	+3.73	+12.75	+35.65	+26.31	+42.73	+46.32	+296.44
19. Ramban	—	—	—	—	—	—	+6.11	+38.46	+333.46
20. Ramnagar	—	-4.63	-3.69	+28.25	-4.83	-5.03	+57.86	+16.96	+96.57
21. Ranbirsingh Pora	—	+20.58	+29.11	+3.36	+62.09	+38.30	+34.77	+61.34	+684.50
22. Reasi	—	+1.84	+8.55	+34.00	+7.16	-7.71	+60.67	+19.59	+143.88
23. Samba	—	+4.81	+20.64	+12.68	+16.34	+14.04	+35.06	+35.15	+245.03
24. Udhampur	—	+1.27	+52.01	+28.43	+59.96	+37.47	+59.72	+39.75	+870.72

1. The towns added for the first time in 1981 census are as follows: Vijapur (2731), Baribrahmana (16,099), Thannamandi (2614), Sunderbani (1686), Billawar (3139), Parole (5397) and Rehambal (5,743).
2. Jammu urban agglomeration is taken as a unit.

steadily until 1941-51 decade except Ramnagar which it again went on decrease during 1941-51 and 1951-61 followed by Reasi. The remaining towns during the same decades recorded a slower rate of growth with high variations in their percentage decennial growth. During these decades, however, it may be characterized as the period of recovery and the period of steady growth. During the last three decades, the growth situation has substantially been improved in almost all the towns of the region except Banihal which declined by -6.27 percent during 1961-71 (Table 1.4) but again recovered the loss by recording 119.92 percent which is the highest percentage in the region during 1971-81. It is interesting to note that Chenani has a negative growth by -3.13 percent during 1971-81 because of the outmigration to Udhampur which is situated at a distance of 29 km.

The growth in the number of towns during 1901-1981 shows a tremendous increase from 1 to 31 towns. However, in 1911 there were 18 towns in all with an addition of 17 towns over the previous census because of the definitional change in the towns criteria. In the following decades, the number of towns were almost the same but during the last three decades, the number of towns gradually have grown. According to 1981 census, 7 new towns are added for the first time of which Bari-rahamana is the largest growing town with a population of 16,099 and Sunderbani is the smallest town with 1,686 persons (Table 1.5).

TABLE 1.5
Jammu Region
Growth in the Number of Towns

<i>District</i>	1901	1911	1921	1931	1941	1951	1961	1971	1981
Doda	—	3	2	2	2	2	6	6	6
Udhampur	—	5	3	4	4	4	4	5	6
Kathua	—	3	5	2	2	2	4	4	6
Jammu	1	5	4	4	4	4	6	6	8
Rajouri	—	1	1	1	1	1	2	2	4
Poonch	—	1	1	1	1	1	1	2	1
Jammu region	1	18	13	14	14	14	23	25	31

(iii) Urban occupation structure

The overall urban occupational structure of the state in 1971 shows that the total active workers were recorded at 25.87 percent while 74.13 percent as non-workers. Of the total workers 21.16 percent population was engaged in trade and commerce while 11.20 percent in transport and communication followed by 10.94 percent in manufacturing activities. The primary activities (13.25 percent) got superseded over the manufacturing activities which shows that there exists a substantial amount of rurality in urban sectors also, particularly in small and medium towns. However, the professional and domestic services dominated the scene among all the activities. (Table 1.6)

It is interesting to note that the urban occupational structure by size class and status showed peculiar characteristics. The city which recorded only 5.75 percent population in primary activities in 1961 rose to 9.15 percent in 1971. The concentration of population in this sector went on to increase from highest order city to the lower order city except in the case of the urban hamlet which recorded a slightly low percentage (18.98 percent) in 1971. This is because of the outmigration from small towns to the city. A slightly increase was recorded in secondary sector from 1961 to 1971 in the urban villages and the urban hamlet but the city and the small towns had noted a significant increase. In case of the tertiary activities, city recorded a decline followed by small towns and urban villages while urban hamlet recorded a slightly increase. But the overall situation was more or the less the same from 1961 to 1971 in both the cases, secondary sector as well as the tertiary sector (Table 1.7).

If we see in relative terms, we find that the majority of towns had recorded the dominant functions of either the primary activities or the services, i.e., 16 out of 25 urban centres dominated the scene by 'quasi-urban characteristics' while 9 urban centres recorded by effective urban characteristics.⁴ The list of the dominant functions in urban centres is as follows :—

TABLE 1.6
Urban Occupational Structure in Jammu & Kashmir 1971

Census Industrial categories	% to total urban population	% to total urban works	% to total urban population	% to total workers	% to total population	% to total works	% to total population	% to total workers
<i>Primary</i>								
Cultivators	1.95	7.35	2.06	7.70	1.72	6.64	10.87	26.55
Agricultural labourers	0.54	2.03	0.55	2.04	0.52	2.00	2.26	5.22
Household industry	1.83	6.91	2.49	9.31	0.50	1.94	2.50	6.11
Total	4.32	16.29	5.10	19.05	2.74	10.58	15.63	38.18
Mining, Quarrying	0.08	0.31	0.07	0.27	0.10	0.40	0.27	0.65
Livestock, fishing etc.	1.17	4.42	1.46	5.46	0.59	2.27	2.10	5.13
Total	5.57	21.02	6.63	24.78	3.43	13.22	18.00	43.96
<i>Manufacturing</i>								
Processing, servicing and repairs	3.53	13.32	3.87	14.57	2.83	10.94	1.26	3.39
<i>Commercial</i>								
Trade and Commerce	4.56	17.23	4.11	15.32	5.47	21.16	4.38	10.68
Transport, storage and communication	3.18	12.01	3.22	12.40	2.90	11.20	1.96	4.79
Total	7.74	29.24	7.43	27.72	8.37	32.36	6.34	15.47
Other services	8.28	31.29	7.62	28.45	9.62	37.16	12.91	31.52
Construction	1.36	5.13	1.23	4.58	1.62	6.29	2.44	5.96
All total	26.48	100.00	26.78	100.00	25.87	100.00	40.95	100.00

TABLE 1.7

Jammu Region
Urban occupational structure by class size

Class size	Primary sector		Secondary sector		Tertiary sector	
	1961	1971	1961	1971	1961	1971
City						
*(100.00+)	5.75	9.15	12.91	22.16	81.33	68.68
Large Towns						
(50,000—	—	—	—	—	—	—
99,999)						
Medium Towns						
(20,000+						
49,999)	—	—	—	—	—	—
Small Towns						
(10,000—						
1999).	17.59	20.87	10.96	18.13	71.46	61.03
Urban village						
(5,000—						
9999)	15.94	27.41	17.56	17.55	66.50	55.60
Urban hamlets						
(below 5,000)	25.58	18.98	15.68	16.07	58.76	64.95
Total urban						
Jammu Region	23.60	21.17	15.23	16.91	61.19	62.02

*refers to Jammu urban agglomeration.

1. Primary activities : Arnia, Batote, Bhaderwah, Bishna, Kathua, Kishtwar, Ramnagar, Ranbirsinghpura, Surankot=9.
2. Services : Doda, Hiranagar, Lakhanpur, Nowshera, Poonch, Rajouri, Udhampur=7.
3. Industrial : Akhnoor, Basohli, Chenani, Katra, Reasi, Sumba=6.
4. Trade and commerce : Banihal, Jammu, Ramban=3.

2. The Kashmir Region

The Kashmir region consisting districts of Anantnag, Pulwama, Srinagar, Badgam, Baramulla and Kupwara covers an

area of about 15,853 sq km.⁵ with population of 3,134,904 in 1981. The region constitutes 52.36 percent of the total population of the state in 7.13 percent of the total area. There are altogether 23 urban centres of different size classes which concentrate 26.42 percent of the total population of the region—a level which may really be called as more urbanized region when compared with other Himalayan regions of India and even has slightly higher percentage than the national average of about 22 percent. But the pattern of urban growth and distribution is not uniform. As for example, Srinagar urban agglomeration alone constitutes 73.18 percent of the total urban Kashmir while 16 towns (below 10,000 population) absorb only 10.23 percent. This degree of imbalance is obviously an indicative of centralization-polarization process which leads to an establishment of a primate city.⁶

The region may be divided into three sub-regions; namely, the Jhelum plain, the *Karewas* and the Rimland.⁷ As a whole, the region may, however, be characterized by the uneven longitudinal profile, semi-enclosed system, extreme isolation, poor accessibility and inadequacy of transport and untapped mineral, power and forest resources. Since towns have been regarded as an apex of the region, therefore, we shall examine the geographical historico-cultural factors and socio-economic conditions which are responsible for all aspects of urbanization *i.e.*, process, pattern, characteristics and correlates.

(i) *Process of Urbanization*

The origin of towns in the region dates back to the remote past. The ancient city what is known as Pandarethan (Purana-disthan) was founded by the King Ashoka as his capital (272-230 B.C.). Since then, a systematic records of the origin of towns have been established in the form of capitals. The capital sites thus functioned as the religio-cultural and administrative centres before the 10th century A.D. In the medieval period, a number of capital places originated but were confined within the compass of modern Srinagar and acted mainly as the socio-economic and administrative centres. In the modern period, particularly after the independence, the era of planned

development through the Five Year Plans started as a result of which a remarkable shift from rural areas to urban areas has taken place. It is interesting to note that the immigrant rural population in urban areas has not at all affected any occupational structural change but significantly added to a higher percentage in primary sectors. The plan periods have, however, proved more effective in the creation of a number of towns. Also a large in-flow of tourists which have also resulted greatly in the evolution of a number of towns (15 towns have been added since 1951 with 9 towns). It may be mentioned that 7 urban centres have been added for the first time in 1981, particularly, Qazigund, Achabal, Kukernag, Ganderbal have largely come up on account of tourism. On the whole Srinagar city has been the capital of Kashmir for more than 1300 years in the past, with the result that centralization-polarization process have led to a greater degree of urbanization by way of functioning as a primate city. However, through the ages, Srinagar has also functioned with the changing nature of key attributes, e.g., religio-cultural socio-economic, administrative, manufacturing, and services above all as the central place of tourist industry at present.

Besides, Srinagar the other towns of the region (namely, Anantnag, Baramulla, Sopore, Bijbehara, Pampore, and Uri) being situated along the river Jhelum had functioned as the major collecting and distributing centres because of the transhipping and navigational facilities. They, however, get reduced in their importance to some extent with the coming of the modern means of transport. Gulmarg, Pahalgam, Mattan, Kukernag and Achabal the wellknown tourist centres and the statellite towns of Srinagar, viz. Pampore, Ganderbal, Pattan, Charisherif and Pulwama and the zone of contact towns, namely, Shopiyan, Handwara, Kupwara, Bandipore, and Qazigund—altogether come under the greater impact of Srinagar and also form the mutual relationship and had once upon a time interacted greatly by Srinagar as liason with the Central Asian countries through the silk route.

(ii) *The distributional characteristics of towns*

Of 23 towns, nearly two-third towns are located in the Jhelum plain while 3 towns are situated in the *karewas* followed

by 4 towns in the Rimland. The distributional pattern corresponds largely with the physiographic conditions of the region. The number of concentration of towns shall explain, themselves about their low and high concentration. As for example, the *karewas* have the problems of irrigation and uplands topography and unfertile soil for the cultivation of crops. The towns which fall in this sub-region are Shopiyan, Tral and Pampore. Similarly, in case of the Rimland, famous hill resorts, namely, Pahalgam, Gulmarg are found while Uri and Kupwara wholly lie on the face of the mountain. The concentration of so many towns in the Jhelum plain is obvious because of the perennial characteristics, fertile soil and a somewhat levelled plain. Majority of the towns is situated along the river courses or the channels or along the roads.

The highest percentage of urban population lies in Srinagar district while the lowest in Kupwara district. Although, Anantnag and Baramulla districts jointly concentrate as many as 14 towns with only 14.76 percent—a figure which is very below than the regional average (26.42 percent). Of the total urban centres, 21 towns of all five districts account for only 31.15 percent while 2 towns of Srinagar district alone constitute 68.85 percent. This shows a high degree of imbalance among the districts of the region (Table 2.1).

If we see distribution of urban population by size classes, we find that Srinagar city alone constitutes 73.18 percent but shows a declining trend of percentage since 1951. The medium towns, namely, Anantnag, Baramulla and Sopore account for 12.26 percent. The remaining 14.56 percent with 19 towns including three levels of size classes show a very less contribution towards the level of urbanization. The scale of urbanization is not helpful for the regional development but level of urbanization really matters much more for a region (Table 2.2).

(iii) *Urban Growth during Census Decades*

The net growth of urban population of the region during 1901 to 1981 is 575.35 percent, urban population rose by 705 thousands. This 80 years duration has seen a steady growth in the proportion of urban to the total population

TABLE 2.1

Kashmir Region
Distribution of Urban Population 1981

<i>District</i>	<i>No. of towns</i>	<i>Urban population</i>	<i>Total percentage to urban population</i>
Anantnag	8	70,286	8.49
Pulwama	4	36,279	4.38
Srinagar*	2	470,195	68.85
Badgam	1	51,885	6.27
Baramulla	6	89,766	10.84
Kupwara	2	9,688	1.17
Kashmir Valley	23	828,099	100.00

*Srinagar urban agglomeration is taken as a unit.

except a slight decline in 1921. However, the break-up in the proportion reveals that the early decades (1901-1921), had a meagre growth on account of slow pace of socio-economic development, during 1931-1951 some acceleration in the growth did take place but on account of political unrest, little development had taken place in towns. The post-independent period may, however, be characterized by a rapid growth due to the successive Five Year Plans and partly due to the tourism. This explanation lies in the fact that in 1901, there were 122, 618 persons living in only one town but in 1981, there are 23 towns with 828,099 persons and account for 26.42 percent of the total population (Table 2.3).

In relative terms, the pattern of decadal urban growth is not uniform. The towns which have more than the average net growth (575.35) percent are : Uri (1357.90), Bandipore (991.17), Handwara (735.35) and Gulmarg (587.14). A constant growth was recorded in 5 towns, namely, Srinagar, Anantnag, Baramulla, Sopore and Pampore while Bijbehara and Shopiyan and Uri experienced a negative growth in the intermediate periods

TABLE 2.2
Kashmir Region
Urbanization trends—Distribution of towns and urban
population by size classes (1901-1981)

Size class	Number of Towns								
	1901	1911	1921	1931	1941	1951	1961	1971	1981
City(100,000+	1	1	1	1	1	1	1	1	1
Large Towns									
(50,000—									
100,000)	—	—	—	—	—	—	—	—	—
Medium									
town (20,000-							1	3	3
50,000)	—	—	—	—	—	—			
Small town									
(10,000-				2	3	3	2	—	3
20,000)	—	—	—						
Urban villages									
(5,000-		3	3	1	—	3	3	7	9
10,000)	—								
Below urban									
Hamlets(5000)	—	8	3	5	5	1	5	5	7
Total urban									
Kashmir	1	12	7	9	9	8	12	16	23
Size class	% of total urban population in each size class								
	1901	1911	1921	1931	1941	1951	1961	1971	1981
City									
(100,000+)	100	76.63	80.32	80.19	79.34	79.48	76.80	75.12	73.18
Large towns									
(50,000-									
100,000)	—	—	—	—	—	—	—	—	—
Medium									
town (20,000-							5.49	14.50	12.26
50,000)	—	—	—	—	—	—			
Small towns									
(10,000-				9.98	13.81	15.28	10.11	—	4.33
20,000)	—	—	—						
Urban villages-									
(5,000-		14.64	14.02	3.17	—	4.67	8.69	—	8.23
10,000	—								
Below urban									
Hamlets									
(5000)	—	8.73	5.66	6.66	6.85	0.28	2.93	1.69	2.00
Total urban									
Kashmir	100	100	100	100	100	100	100	100	100

Source: Census of India From 1931 Srinagar U.A. is taken as a unit.

TABLE 2.3

Kashmir Region
Urban Growth (1901-1981)

<i>Year</i>	<i>Urban population</i>	<i>Decade variation</i>	<i>Decadal Growth</i>	<i>%age to the total population</i>	<i>No. of towns</i>
1901	122,618	...	...	11.20	(1)
1911	164,866	+42,248	+34.45	14.38	(12)
1921	176,457	+11,601	+ 7.04	14.21	(7)
1931	217,563	+41,096	+23.29	15.67	(10)
1941	264,180	+46,617	+21.42	17.30	(10)
1951	315,440	+51,260	+19.41	18.41	(9)
1961	384,219	+68,779	+21.80	20.23	(13)
1971	563,450	+179,231	+46.65	23.13	(17)
1981	828,099	+264,649	+46.97	26.42	(23)
(1901-1981)		+705,481	(575.35)		

*Srinagar Urban Agglomeration is taken as a unit.

but later they all recorded a consistent growth. Some towns were declassified as towns during the intermediate decades but later grew so fast that they recorded more than the regional average, e.g., Bandipore, Handwara, Gulmarg, and Mattan with an exceptional (125.60 percent). It is surprising to note that Gulmarg noticed a negative growth by (—5.89 percent) during 1971-1981 decade because of the seasonal-cum-outmigration (Table 2.4).

The progress in the number of towns during 1901-1981 shows an increase of 22 towns. There has been fluctuations in the growth pattern of towns because of the definitional changes, some towns added and also some declassified. As for example, in 1911, 11 towns were classified as towns but subsequently 5 towns namely, Kulgam, Bandipore, Gulmarg and Uri were dropped in 1921. But again Mattan and Uri were added in 1931 which continued till 1941. It was during 1951 when Mattan again was dropped and in 1961 Pahalgam was freshly added in place of Handwara by matching the position of 1911. However, 4 towns were added in 1971 of which Tral and

TABLE 2.4
Kashmir Region Pattern of Population Growth in Towns

Towns (1981)	Net growth as town	Percentage Decennial growth							
		1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	1961-71	1971-81
1. Srinagar	+394.22	+3.04	+12.18	23.09	20.14	19.62	16.40	42.02	+43.27
2. Anantnag	+276.74		+4.93	+13.44	+11.63	+37.97	+27.52	+31.09	+22.92
3. Baramulla	+414.40		+2.20	+2.11	+84.78	+28.02	+21.89	+32.64	+28.90
4. Sopore	+294.45		+0.12	+28.84	+7.18	+30.65	+23.47	+45.87	+21.62
5. Bandipore	+991.17		DECLASSIFIED						
6. Pampore	+223.57		+4.36	+10.73	+14.91	+12.62	+11.20	+54.13	+26.23
7. Bijbehara	+143.92		—	+3.48	+21.2	+20.54	+17.04	+33.09	+26.80
8. Shopiyan	+356.62		+5.77	—0.85	+96.62	+178.18	+15.66	+30.49	+28.29
9. Kulgam	+356.93							+38.49	+28.78
10. Tral									+24.70
11. Mattan	+125.6					+15.62	DECLASSIFIED		
12. Handwara	+735.35								+42.61
13. Pahalgam	+36.77							+21.61	+31.66
14. Uri	+1357.80					+33.44	—32.79	—48.78	+12.46
15. Kokernag								+0.45	+462.30
16. Gulmarg	+587.14					DECLASSIFIED			+30.53
								+162.59	—5.89

1. Town added for the first time in 1981 census are as follow s:

1. Ganderbal, 2. Pulwama, 3. Charisharif, 4. Pattan, 5. Ahabal, 6. Kripwar a, 7. Qazigund.
2. Srinagar Urban Agglomeration is taken as a unit,

Kukernag were the new classified towns followed by 7 towns in 1981 (Table 2.5):

TABLE 2.5
Kashmir Region
Growth in the number of towns

<i>District</i>	1901	1911	1921	1931	1941	1951	1961	1971	1981
Anantnag	—	5	4	5	5	4	6	8	8
Pulwama	—	—	—	—	—	—	—	—	4
Srinagar*	1	1	2	1	1	1	1	1	2
Badgam	—	—	—	—	—	—	—	—	1
Baramulla	—	6	2	3	3	3	5	6	6
Kupwara	—	—	—	—	—	—	—	1	2
Total	1	12	7	9	9	8	12	16	23
% Decade variation	—	+	—	+	—	—	+		
	1100.0	41.66	28.57	00.00	11.11	50.00	33.33	43.75	

*Srinagar urban agglomeration is taken as a unit.

(iv) *Urban occupational structure*

Of the total urban population of the region, 26.78 percent were recorded as active workers while 73.22 percent as non-workers. Amongst the total active workers, primary-cum-traditional activities accounted for 24.78 percent while manufacturing activities only engaged 14.47 percent followed by 27.72 percent in commercial and transport activities. Engaging one fourth population in primary activities suggests a vast scene of rurality on the urban landscape which are more dominant in small towns and medium towns (Table 1.6).

It is evident from the following Table 2.6 that the primary activities increased from city level to urban hamlet level while secondary and tertiary activities decreased from city to urban hamlet. It is noteworthy that the city had recorded an increase in the primary activities from 4.39 percent in 1961 to 8.39 percent in 1971, while urban hamlet got declined from 44.35 percent in 1961 to 43.67 percent in 1971. In other words, there are found unvariably outmigration from small urban centre to city. Since the city is inadvertent to absorb the immigrants

in secondary and tertiary activities, therefore, they get themselves engaged in agricultural activities on the peripheral zone of the city.

TABLE 2.6

Kashmir Region
Urban Occupational Structure by Class Size

Class size	Primary sector		Secondary sector		Tertiary sector	
	1961	1971	1961	1971	1961	1971
1. City*	4.39	8.39	21.35	23.82	74.26	67.80
2. Large towns	—	—	—	—	—	—
3. Medium towns	28.22	16.80	19.88	23.33	51.90	59.87
4. Small towns	28.56	—	16.02	—	55.42	—
5. Urban villages	28.88	40.76	27.47	18.24	42.65	40.87
6. Urban Hamlets	44.35	43.67	7.25	12.05	48.43	44.28
Urban Kashmir	30.97	33.58	16.39	18.13	52.64	48.39

—refers the absence of town in this category.

*City refers to urban agglomeration which is taken as a unit.

If we examine the towns individually, we find that the majority of towns have the dominant functions of primary activities followed by industrial activities in some of the towns. The following list gives the name of towns with the dominant functions :

1. Primary activities : Bandipore, Handawara, Kukernag, Kulgam, Mattan, Pahalgam, Pampore, Sopore, Tral and Uri=10.
2. Industrial activities : Anantnag, Baramulla, Bijbehara, Srinagar and Shopiyan+5.
3. Services : Badambagh Cantt.
4. Trade and commerce: Gulmarg.

3. The Ladakh Region

Situated in the north-eastern part of the Kashmir region, the Ladakh region comprising the districts of Kargil and Leh may be characterized by the snow ranges with more than 6000 metres and high altitude valleys which have sparsely inhabited villages, harsh climate conditions and remote region forming a distinct culture and socio-economic conditions and moreover semi-isolated region. Within this geographical framework of the region, the towns also bear the regional imprint which shall be statistically examined.

Kargil is situated in the Dras valley of the Great Himalayan Zaskar region at an altitude of about 2,676 metres with varying annual temperature, max. 35°C , min. -22.6°C , while Leh lies in the Indus-Furrow at an altitude of 3,505 metres with the annual temperature max. 10°C and min. -2.8°C . Both the towns are regional centres which are connected by National Highway from Srinagar and are situated at a distance of about 232 km and 456 km respectively. Between Kargil and Leh the distance being 224 km with motorable road which is opened round the year but in case of Srinagar to Kargil, the road is closed during the winter season.

(i) *Urban Growth Pattern*

For the first time, Kargil and Leh were classified as towns in 1911 but in 1921, Kargil was declassified as town and remained the same till 1961. It was only in 1971 when it again retained the status of a town. However, the percentage decadal urban growth shows a steady growth till 1961 with the exceptions of 1921 and 1971 decades. However, during 1971-81, the region experienced comparatively higher growth rate than that of the Jammu and the Kashmir regions. The net growth is very low (109.85 percent). The break-up of this percentage is 168.21 percent for Kargil and 201.14 percent for Leh (Table 3.1).

As regards the distribution of total urban population, Kargil accounts for 28.80 percent while Leh 71.20 percent.

So far as the regional urban occupational structure is concerned it gives an interesting feature that 43.96 percent of the

TABLE 3.1
Ladakh Region
Urban Growth (1901-81)

Year	Urban Popula- tion	Decade variation	Decadal Growth	Percentage to the total population	No. of towns
1901	...	...	...	...	...
1911	4210	...	...	6.19	2
1921	2401	-1809	-42.97	3.50	1
1931	3093	+ 692	+28.12	4.28	1
1941	3372	+ 279	+ 9.02	4.44	1
1951	3546	+ 174	+ 5.16	4.25	1
1961	3720	+ 174	+ 4.90	4.20	1
1971	7909	+4189	+112.60	7.51	2
1981	12245	+4336	+54.82	9.11	2
(1911-81)		+8035	+190.85		

population is engaged in primary activities followed by 3.09 percent in manufacturing, 15.47 percent in trade and transport, 31.52 percent in services and 5.96 percent in construction. Compared from 1961 with 1971, we find a shift of population from other sectors to tertiary sectors because of the regional linkages and the improvement in socio-economic conditions and above all the geo-political significance of the region. The statistics reveal that in tertiary sector, the percentage has increased from 25.03 in 1961 to 49.47 in 1971 while in primary sector, the percentage has decreased from 52.83 in 1961 to 38.62 in 1971 followed by 22.14 in 1961 to 11.90 in 1971 in the secondary sector.

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Socio-Economic and Political Perspective of Medieval Srinagar in its Ancient Geographical Setting

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SSRINAGAR has remained the capital city of the Kashmir Valley since ancient times. The city did not owe its importance just to its being a seat of government, it survived several changes of rulers, and it had more than ephemeral reasons for its existence. During the ancient and medieval periods Srinagar grew considerably, in fact, each period of its history has a fascinating story to tell about its growth as the nucleus of political administrative, economic and, more importantly, religious-cultural activities. Great historical events and political upheavals which have taken place here in the years gone by, have left an indelible impress, and have, to a large extent, direct bearing on its growth and development as chief city of the Jammu and Kashmir State. The aim of the present paper is mainly to focus on such forces as made the wheel of Kashmir's social, cultural, economic and political life, revolve round its

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hub—"Venice of the East"—as Srinagar came to be called in the modern times.

The name of Srinagar is mentioned in Kalhana's *Rajatarangini*. According to Kalhana, ancient Kashmir has had a number of capitals. The most important of these ancient cities was Srinagari, which was founded by Asoka in 250 B.C.¹ Srinagari, the city of Sri, an appellation of the goddess 'Lakshmi' occupied the site of the present village what is known as Padrethan, about a mile and half east of the Takht-i-Sulaiman hill. Pandrethan derives its name from the Sanskrit work *Puranadhisthana*, literally the old capital.

Srinagari remained the capital of Kashmir till about the middle of the Sixth Century A.D., when a new city was founded by Pravarasen II near the Hari Parbat Hill. This was called Pravarapura, after its founder's name, and extended only along the right bank of the River Jhelum (Vitasta).² But strangely enough, Pravarapura lost its own name and assumed that of the old city of Srinagari. Since both capitals (Srinagari and Pravarapura) were near to each other, the old name remained in common use with the people in preference to the new name. It was the old familiar name of Srinagari which triumphed over the new city of Pravarapura.³

Hieun Tsiang, the first Chinese traveller to visit Kashmir in 641 A.D. mentions the two capitals of Kashmir, the old and the new. He records that in his time the capital of Kashmir was the new city (Pravarapura) and the old city lay to the south east of it at a distance of ten li (2 miles) and to the the south of a great mountain. This description seems to conform with the identification of Pravarasena's Capital with the present Srinagar, and Ashoka's capital with Pandrethan and its surroundings.⁴

In Kalhana's description of Pravarapura one can see a great deal of modern Srinagar. He describes the city as having markets and mansions which reached the clouds and were mostly built of wood, like the houses of the common people in modern Srinagar. The chronicler goes on to describe the streams meeting, pure and lovely, at pleasure-residences and near market-streets. He evidently refers to the Dal Lake, the River Jhelum and the numerous canals which intersect the city. From time immemorial these canals and the river have served as the

main thoroughfares for the transport of goods and "all principal bazars are built along their banks". Nor does Kalhana forget to shower praise on the cool water of the *Vitasta*. He has also described the Pleasure-Hill (Hari Parbat) from which the splendour of all the houses was visible. Besides, there were many splendid temples with which Pravarapura had been adorned by successive kings.⁵

Such is Kalhana's description of ancient Srinagar. His long list of the buildings and sites in the capital of Pravarasen can also be identified in and around the present city of Srinagar and its environs.

Among the ancient relics the pride of place goes to the embankment which stretches from the Dal Gate along the Tsunth Kul canal to the River Jhelum. Curiously enough, it resembles in shape the bent leg of a *Rakshas*. The following legendary account has been furnished by Kalhan with regard to the foundation of Pravarapura.

It is said that Pravarasen II while in search of a site for his new city was confronted by a demon (*Vetala*) on the other side of the *Mahasarit* (Tsunth Kul).⁶ The Rakshas stretched out his own leg from the other bank, and "thus caused the water of the *Mahasarit* to be parted by an embankment. The courageous king cut off his leg with his dagger (*Ksurika*) and crossed over it to the other side which "has since been known as Ksurikabala. The demon then indicated to him the auspicious time and disappeared after telling him to build his town where he would see the measuring line laid down in the morning. This line (*Sutra*) of the Vetala the king, eventually discovered at the village Saritaka at which the goddess Sarika and the demon Atta resided. There he built his city in which the first shrine erected was the famous one of Siva Pravareswar. Whatever the significance of this legend, it cannot be denied that this embankment generally known as South is undoubtedly of a very early date. This embankment protects the whole of the low-lying portions of the city on the right river-bank as well as the floating gardens and the shores of the Dal which would otherwise be exposed to floods from the River Jhelum. "It is indeed evident", remarks Stein, "that its construction was a necessary condition for the safety of the newly founded city".⁷

Another ancient relic is the rock on the south of Hari Parbat now smeared with red paint. This was then regarded as an incarnation of the god Ganesha, who in his interest in the new city that was coming up around him, is said to have turned his face towards the east in order to look at it better.

Among other relics of Pravarasen's city are the embankments along the River Jhelum. Constructed of the massive pillars and some blocks these embankments which 'used to support the edifices of Pravarasen's city', were further adorned by later kings. Fergusson remarks ; "The extent of these ruins and the elaborate carvings which they display testify to the labour and effort which must have gone to the making of the capital and enable one to conceive something of the magnificence which the city must have possessed".⁸ Besides, the old Muslim cemetery at the foot of Hari Parbat Hillock is also said to contain the remains of Pravarsen's city.

Having thus located some ancient sites of Pravarasen's city, it may then be asked, why was the particular situation of Srinagar chosen and maintained throughout the centuries ? The later Hindu rulers are reported to have transferred the capital from one place to another. Lalitaditya founded Parihaspurha. Jayapida laid out the city of Jayapura. Avantivarman founded the city of Avantipura. Samkarapura, Kaniskapura, Juskapura and Hushkapura were some other ancient capitals of Kashmir. But all these later capitals lost their importance and decayed as is shown by their ruins. It was the capital of Pravarasen alone which has survived various attempts to change it.

It is to be admitted that Pravarasen's choice was impeccable. His well-chosen site for the capital has remained the situation of the capital of Kashmir to the present day. The king must have chosen this site not only for its beauty and strategic importance, but also for its intrinsic value.

First, Srinagar is gifted with great natural advantages. The River Jhelum which winds its way through the thickly populated city, has served as the main artery of communication from times immemorial. The principal bazars of the city are built along the river which "has provided at all seasons the most convenient route for trade and traffic both up and down the valley" Stein

has rightly said that "Srinagar enjoys facilities of communications which no other side could offer". Thus economically Srinagar is a distributing centre for the incoming merchandise from the different parts of the Valley. This is still illustrated today by the importance of Srinagar as a chief commercial centre of the Kashmir valley.

Secondly, Srinagar is the point which commands trade routes to India and Central Asia. "The great trade-route from Central Asia debouches through the Sind Valley at a large distance of only one short march from the capital".

Thirdly, the Dal and Anchar lakes which flank Srinagar with their numerous agricultural products in food supply, fulfil the needs of the city population.

Fourthly, strategically the rivers and the lakes make Srinagar invulnerable. Commenting on the strategical importance of Srinagar city, Sir Stein remarks :

"The frequent sieges which Srinagar underwent during the last reigns related by Kalhana, give us ample opportunity to appreciate also the military advantages of the position of the city. With the exception of the comparatively narrow neck of high ground in the north, the Srinagar of the right river-bank is guarded on all sides by water. On the south the river forms an impassable line of defence. The east is secured by the Dal and the stream which flows from it. On the west there stretch the board marshes of the Anchar close to the bank of the Vitasta.

"From the north, it is true, the city can be approached without passing such natural obstacles. But just to the north of the Sarika Hill inlets from the two lakes approach each other within a few thousand feet. The narrow passage left here could all times easily be guarded. It is curious to note that all successful attacks on the city of which the chronicler tells us, were delivered from the north, treachery of the defenders' weakness having opened this passage".⁹

Lastly, Srinagar is centrally situated. The city is equidistant from the two chief commercial towns of the Valley—Anantnag and Baramulla. Srinagar is almost equidistant from Jammu, Rawalpindi, Leh and Gilgit.

Extension of the Limits of Srinagar in the Eleventh Century

It is not correctly known when the extension of the city of the left bank of the Vitasta took place. This portion is "enclosed by the canal which takes off the river below Sher-Garhi and joins it again near the Seventh Bridge". The number of ancient relics which is large on the right bank of the river is comparatively small on the left bank of the river. In ancient times the left bank of the Vitasta remained of secondary importance, although it was only in the reign of Anata (A.D. 1028-63) that the Royal Palace was transferred to it.¹⁰

Bilhana, the eleventh century chronicler, found Srinagar equally charming. To him, Srinagar was not only the principal city Kashmir, but excelled in beauty all other cities, even Kuvera's town Lanka and the town of the gods. For its coolness in summer and for the beauty of its groves, remarks Bilhana, 'even those who have reached the garden of celestials could not forget it'. It is also significant to note that Bilhana, Ksemendra and Mankha's statements pertaining to the position of Pravarapura also agree with the site occupied by modern Srinagar.¹¹

Srinagar during 'Muslim Rule'

During the 'Muslim rule' (1320-1819) in Kashmir the ancient name of the Capital fell into disuse. The city of Srinagar was termed 'Kashmir', the same as country. Accordingly, with the exception of Mirza Haidar, Abul-Fazl and Jahangir, almost all Mughal chroniclers call it either Kashmir or Shahr-i-Kashmir. Bernier and Desideri who visited Kashmir during the Mughal rule also use the name Kashmir and not Srinagar for this capital. For several centuries Srinagar was thus known, until the advent of the Sikhs in 1819 who restored the old Hindu name, by which it is at present called.

With the appearance of the Muslims, Srinagar underwent a radical change. Though the seat of government changed occasionally, the position of Pravarasen's city, as a whole, remained unaltered. Rinchan, the first Muslim ruler of Kashmir founded a quarter in Srinagar known as Rinchanpura.¹² It was here that he built the first mosque in Kashmir, known as Bud-Masheed

on the site of a Buddhist temple. Rinchan, who had embraced Islam at the behest of a Muslim saint, Bulbul Shah, also built a public charity kitchen (Langar Khana) in the memory of his religious teacher and is still known as Bulbul Langer.

Alauddin (1344-56) founded Alauddinpura at Srinagar which at present comprises the locality situated between Jama Masjid and Ali Kadal. "The great and wise king", remarks Jonaraja, "made Jayapidapura his capital and built at Sri Rinchanpura, an edifice named Budhagira".¹³ Budhagira of Alauddin is now a mohalla near Ali Kadal in Srinagar. "This edifice built by Alauddin was used as a resting place for travellers in his time and thereafter, and appears to have been used by traders from Ladakh and Baltistan." Shihabiddin (1356-74) selected the Hari-Parbat for his capital.¹⁴ He was succeeded by Qutbuddin (1374-89) whose reign stands as a landmark in the annals of Islam in Kashmir. Srinagar saw ceaseless religious activity during his reign which engulfed the whole Valley. Sayyid Ali Hagmadani who visited Kashmir in Qutbuddin's time, made Srinagar his seat and preached the gospel of Islam at a place in Srinagar which was subsequently known as the Khanqah-i-Muhalla. It was at Khanqah-i-Muhalla that Sultan Sikandar (1398-1413) built a mosque which in course of time became not only a centre for religious but all for political activities of the Muslims of Kashmir. Qutbuddin is reported to have laid the foundation of Qutbuddinpura on which two mohallas of Srinagar, namely, Langarhatta and Pir Haji Muhammad, now stand.¹⁵

Sultan Sikandar (1389-1413), besides building Khanqah-i-Muhalla mosque, erected the Jama Masjid. Sikandar's son Zain-ul-Abidin popularly known as Budshah was a man of versatile talents. He built Zainakadal which preserves his memory even up to this day. The king also founded Nau Shahr, near Srinagar, which was, as Dr. Sufi¹⁶ observes, in modern terminology his New Delhi. The Mar canal founded by Budshah in Srinagar was till recently the main artery of communication between the Srinagar city and the villages near the Dal lake. Among other things Budshah built the Khanqah of Sayyid Muhammad Madani. In addition he built two artificial isles of Rupa-Lank and Sona-Lank to beautify the city. Zain-ul-Abidin

is reported to have introduced new industries like that of shawl, silk, papier-mache, paper, wood-carving, namdah and gabha. The fame of Srinagar all rests on these industries. Srinagar thus became an emporium of trade. Besides, he also introduced stone-polishing, stone-cutting, glass-blowing, window-cutting, gold and silver leaf-making and book binding. No wonder Mirza Haidar paid glowing tributes to the genius Zain-ul-Abidin. "In Kashmir one meets" the Mirza observed, "with all those arts and crafts which are, in most cities, uncommon ... In the whole of Mavar-u-Nahar except Samarqand and Bukhara these are nowhere to be met with, while in Kashmir they are abundant. This is all due to Sultan Zain-ul-Abidin".¹⁷

Sultan Heider Shah (1470-72) transferred his seat of government from Nau Shahr to Nowhatta, but in Sultan Hasan Shah's reign (1472-84) the capital was shifted to Nau-Shahr again.¹⁸

In 1484, Mir Shams-ud-din Iraqi paid his first visit to Kashmir as the ambassador of Sultau Husain Mirza, the governor Khurrasan. He had come with a missionary zeal. It should be remembered that from now Shiaism began to gain ground in the valley.

Mirza Haidar Dughlat (1540-50) founded the thickly populated. In his times there were many lofty buildings constructed of fresh cut pine. According to him, most of these buildings were five storeyed, each storey containing apartments, halls, galleries and towers. The streets were paved with stone. There were only shops of retail dealers—grocers, drapers etc. There were no large bazars, for the whole-sale business was done by the traders in their own houses or factories.¹⁹

Mirza Haidar's short reign was productive of rich cultural activities. Pandit Suka belittles the improvements the Mirza had introduced, particularly in regard to dress and food. The conservative Brahman chronicler criticize the Kashmiris for imitating the Mughal style of dress and diet which, he says, did them more harm than good. Jahangir, on the other hand, is very appreciative of the cultural excellence acquired by the people of Kashmir under Mirza Haidar. He remarks that during his regime Kashmir had many skilled musicians. Muhammad Azam and Moulvi Hasan praise Mirza Haidar for introducing

hot baths, latticed windows and the apparatus for drying paddy, locally know as *narah lul*.²⁰

Mirza Haidar's death in 1550 was followed by a civil war in Srinagar which lasted till 1555, when Nasir-ud-Din Muhammad Ghazi Shah, the founder of the Chak Dynasty, ascended the throne. The Chak rule in Kashmir was marked by internal feuds. This led to the Mughal occupation of Kashmir in 1586. The Mughal emperors entrusted the task of administration to their Governors, and at the same time they also visited the Valley. The political history of Kashmir during the Mughal period is centred round the Hari Parbat fort, Takhat-i-Sulaiman Hill, Nowhatta, Nau Shahr and the area in the vicinity of Jama Mosque. The events that occurred in these parts of the city during Akbar's reign were very decisive for Kashmir.²¹

During the earlier period of the Mughal rule in Kashmir, the city became the headquarters of an army of occupation, constantly engaged in war. Though the Chaks were defeated, their leaders did not reconcile themselves to the idea of Mughal Rule in Kashmir. The first Mughal Governor of Kashmir, Qasim Khan, had to face stubborn resistance from the Chak troops led by Yaqub Shah Chak and Shams Chak. But they were defeated on the slopes of Koh-i-Sulaiman (Shankaracharya Hillock). Once again the Chak freedom fighters made a bold attempt to fight against the Mughals to a finish, but were routed.²²

Akbar first entered Srinagar on 5 June 1589.²³ During his second visit to the city on 7 October 1592,²⁴ the Great Mughal enjoyed the saffron blossom at Pampore, and celebrated the *Diwali*. On this occasion the boats on the Jhelum, the banks of the river and the roofs of the houses in Srinagar were illuminated at the Emperor's command.²⁵

Akbar's third visit to Srinagar on 6 June 1597 was important. This time he was accompanied by Father Jerome Xavier²⁶ and Benedict Goetz, who are the first known European travellers to visit Kashmir. Father Xavier's description of the famine of 1597 gives an idea of the devastation caused by it. He records that famine forced mothers to expose their children for sale in public places in the city. Most of them were baptized by the visiting Portuguese fathers with the hope that by doing so they

would attain salvation and "eternal bliss for souls of the little ones".

To alleviate the sufferings of the famine-stricken population of Kashmir, Akbar is said to have ordered a strongly bastioned stone-wall to be built around the slope of the Hari Parbat hillock in the city. The township within this fort wall was named 'Nagar Nagar'.²⁷ This fort wall is the only extant monument in Srinagar which is still a living tribute to the genius of Akbar.

Jahangir (1605-1628) became so enamoured of the Vale of Kashmir as to make it "the place of his favourite abode, and he often declared that he would rather be deprived of every other province of his mighty empire than lose Kashmir".²⁸ His visits to the Valley brought an era of splendour and prosperity to Srinagar. We are told that during his time there were nearly 800 gardens in the neighbourhood of the Dal lake and "the owners, the nobles of the court, were certain to follow the example of their master in making full use of the facilities that Kashmir so readily offers for pleasure-seeking and enjoyment".²⁹

The Mughal Governors who followed the example of their masters also laid out innumerable gardens in Srinagar. It is said there were about 700 gardens around the Dal lake on the eve of the establishment of the Afghan rule in 1753. The idea of picnics and excursions by the citizens of Srinagar must have originated in the city during the Mughal times.³⁰

Aurangzeb's Governor Islam Khan (1664-65) rebuilt Ali Masjid at Idgah, "a sixteenth century dilapidated structure, and lined its extensive compound with Chinar trees". Saif Khan (1665-68) laid out the garden of Saifabad on the banks of Dal lake. During his second Governorship of Kashmir (1669-72) he spanned the Safa Kadal bridge over the Jhelum in Srinagar in 1670. Fazil Khan (1698-1701) built the bund at Haft Chinar near Hazuri Bagh in the city in order to save it from recurrent floods of Doodhganga river. The bund was lined with the Chinar trees to strengthen it.³¹

But the most historical event of Fazil Khan's Governorship in Kashmir was the arrival of *Mui Mubarak*³² (Sacred hair) of Prophet Muhammad in Srinagar in 1699. The holy relic was

brought to the city by a rich Kashmiri merchant named Khawaja Nur-ud-Din Ishbari, who had bought it in Bijapur. Ever since its arrival in Srinagar the holy relic has been kept at Hazratbal mosque, which has been termed as the second Medina by the people of Kashmir.

Under the Mughals, Srinagar was a splendid city by the standards of the time. Father Xavier, Abul Fazl, Francisco Pelsaert, Jahangir, Bernier and Desideri have all described the city as it existed during the Mughal period. Abul Fazl, found the capital of Kashmir a very fascinating city. He remarks: "Srinagar is a great city and has long been peopled. The river Bhat (Jhelum) flows through it. Most of the houses are of wood and some rise up to five storeys. On the roofs they plant tulips and other flowers, and in the springs these rival flower gardens".³³ Jahangir described the practice of planting tulip flowers on roofs of buildings as a peculiarity of the people of Kashmir.³⁴ Francisco Pelsaert, writing in Emperor Jahangir's time says;

"The city is very extensive and contains many mosques. The houses are built of pine wood, the interstices being filled with clay, and their style is by no means contemptible; they look elegant, and fit for citizens rather than peasants, and they are ventilated with handsome and artistic open-work, instead of windows or glass. They have flat roofs entirely covered with earth, on which the inhabitants often grow onions, or which are covered with grass, so that during the rains the green roofs and groves make the city most beautiful on a distant view".³⁵

Francois Bernier, the famous French physician and traveller visited Srinagar during Aurangzeb's reign. His account of Kashmir's natural beauty and culture of Kashmir is very informative and interesting. He calls the Valley of Kashmir the Paradise of the Indies. Bernier describes the city as not less than three quarters of a league in length, and half a league in breadth. During his time there were only two wooden bridges over the Jhelum. Describing the houses of the city, he remarks that although for the most part of wood, the houses were well-built and consisted of two or three storeys. Wood was preferred by the people of the city because of its cheapness, and "the

facility with which it is brought from the mountains by means of so many small rivers". Most of the houses in the city had also their gardens, and not a few had a canal, on which the owner kept "a pleasure-boat, thus communicating with the lake".³⁶

Father Ippolito Desideri and Manoel Freyre arrived in Srinagar on the 13th November, 1714. The latter in letter from Agra dated 26th April, 1717, dwells on the same points that Desideri had noted—the populous character of Srinagar, its lakes surrounded by pleasant gardens and crowded with boats for pleasure and commerce and the lilies growing on the roofs of the houses. Desideri makes mentions of the small and large boats. The latter must have been the doonga, the precursor of the modern houseboat. Indeed, Desideri seeing Srinagar at the end of Mughal rule, found it at its best.³⁷

In 1753, Kashmir came under the occupation of the Afghans who ruled the Valley from 1753 to 1819. Some of the Afghan Governors did much for the beautification of Kashmir's capital. Amir Khan Jawansher (1770-76) reconstructed the Sonalank in the Dal lake and raised a seven storeyed mansion upon it. He rebuilt the Amira Kadal bridge, which was washed away by inundation in 1772. He also laid out Amirabad garden with beautiful pavilion out of the polished black stones brought from the pavilions in Mughal Gardens. But the most beautiful building constructed by Jawansher was the fort of Sherghari which is still extant.³⁸

Another Afghan Governor Ata Muhammad Khan Barakzai (1806-13) constructed the massive fort on the top of the Hari Parbat hillock.³⁹

George Forster who arrived in Srinagar on 7th May 1783 during the Afghan rule, like Bernier calls it Kashmir. Srinagar had evidently grown since Bernier's visit, as Forster says the city extends about three miles on each side of the Jhelum. While Bernier had noticed only two bridges, spanning the river in the city. Forster observes that there were four or five bridges.⁴⁰ But the traveller describes the streets of Srinagar as filthy which shows that deterioration had set in.

Conclusion

As late as the close of the nineteenth century. Srinagar remained like a medieval city. Its old institutions still flourished, the ancient crafts were still the basis of its economy, and its imports and exports were carried by the coolies on their backs along the narrow unpaved lanes, flanked by high, wooden houses. But Srinagar could not remain a medieval city for ever. The first half of this century saw the breakdown of its isolation, and, on account of the impact of outside forces, flowering of a new socio-cultural trend was visible. How did this transition take place? How did the rural-urban drift give rise to a number of human problems? When did Srinagar's citizens gradually acquiesce in the costly rigours of "municipal improvement"? When and how did the decline of famous latticed (*Pinjara*) work of the wooden houses of Srinagar take place? When was the British urban pattern of architecture imposed in certain part of the city? These and many other important questions which call for a study of Srinagar from the standpoint of the historian sociologist will take us beyond the scope of the paper. Although the present author has attempted to answer these questions and analyzed the changing "behaviour pattern" of the city elsewhere,⁴¹ it will here suffice to say that during the modern period of its history Srinagar was drawn into the vortex of an integrative system, which one may conclude is very much in evidence even today. Social change was not merely cumulative but integrative and synthetic.

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Agricultural Growth in Jammu and Kashmir: Trend and Decomposition Analysis

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THE purpose of the present paper is twofold. First, it examines statistically whether there has been an acceleration, deceleration or stagnancy of growth rates in crop output in the State during 1951-52 to 1976-77. Very often several loose statements are found regarding the growth rates of agricultural economy as rising, falling and constant over time, essentially taking into account two or three observations. This has aroused too much scepticism about the growth of State agriculture. Some are subscribing the dismal performance of economy to unprecedented decline in agricultural growth while some experts have labelled the State agriculture a stagnant one with bleak prospects.¹ However, it appears that the general consensus is on the fact that the State has exhausted its potential of growth with respect to agriculture.² This paper examines the above assertions and uses the trends analysis, additive models and decomposition model to arrive at growth rates in Jammu and Kashmir State. Secondly, it attempts to ascertain the possibilities of meeting the local supply gap which too has been an issue of great controversy.

Farming is a major occupation supporting about 81 per cent of the population in the State. Out of the total area of 24.19

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lakh bectares, according to the Village Papers, the net area sown is 7.06 lakh hectares, that is, about 29 per cent of the total area. While the Jammu Division has launched double cropping programme, the Valley virtually continues to be a mono-crop economy with 68 per cent of its area under paddy crop alone. Though there is a lack of capital intensity on the cereal farms, yet a quasi-breakthrough has been realised in the Valley as is reflected by a massive use of HYV of seeds and chemical inputs. The State is confronted with a paradox. While it wants to achieve self-sufficiency in foodgrains production on the one hand, self-reliance is also sought to be realised on the other. The former objective can be achieved with the drive of economy towards cereal-oriented production pattern based on intensive and extensive cultivation, the latter calls for orchardisation on a large scale. At present there exists a local supply gap to the extent of a little over 2 lakh tonnes of foodcereals per year which is demonstrated by a persistent rise in food imports from 0.26 lakh tonnes in 1950-51 to 2.62 lakh tonnes in 1977. The agricultural sector appears to be growing at a low pace while the orchardisation has exhibited an explosive growth during the past few years.

Growth of Area Under Crops

The paddy and maize are two principal crops grown in the State. Paddy accounted for about 57 per cent of the total cultivated area and 80 per cent of the total cropped area during kharif 1970-71³, while the wheat accounts for the 20 per cent of the total cultivated area. The percentage growth during the past three decades on triennium basis, reveals a persistent shift of cropping pattern in favour of food cereals except in the current decade,

The declining percentage growth of area under food cereals is attributed to the massive land reclamation drive during the fifties on the one hand and conversion of the cereal acreage into orchards during the sixties on the other. The extent of land conversion was about 10400 hectares⁶ of paddy land into orchards including seed farms, vegetable farms and other cash crop forms. Even then the predominance of cereal farms

continue unabated for it stands 79.2 per cent of the cropped area as against all India level of 36 per cent only.

TABLE 1

The Percentage Growth of Major Crop Groups in Jammu and Kashmir

('000 acres)⁴

Cropped area	Percentage Growth			
	1950-51	1960-61	1971-72	
	1960-61	1970-71	1976-77	
1. Total cropped area	+20.2	+5.77	+ 7.63	
2. Net area sown	+ 8.22	+0.77	2.77	
3. Area under food-cereals	+27.50	+9.41	+ 4.79	
4. Area under other crops	+ 0.28	-8.71	+15.38	
5. Area under oil seeds	- 3.45	-2.38	+37.88	

Since the objective of the present study is to examine statistically whether there is any indication of acceleration or retardation of growth during the period under study, we have considered both (1) the standard statistical method of trend analysis which give rise to the quantitative characteristics of growth path and as such can be used for predictive behaviour, and (2) non-parametric tests which broadly indicate the direction of growth.

The linear and exponential functions of the following forms have been fitted to the data on area under the principal crops :

$$1. Y = a + bT$$

$$2. Y = abT \text{ OR}$$

$$3. \log Y = \log a + T \log b$$

Where,

Y = Area under the crop

T = Time

The fitted functions show that the growth rate of area under the food crops is around 0.76 per cent per annum. The area under rice has grown at a trend rate of 1.02 per cent per annum

area under wheat 2 per cent and area under maize 3 per cent per annum according to the exponential fit. The Table 2 gives both statistical functions and growth rates.

Production and Productivity Growth

The local supply gap continues to be one of the predominant features of the agricultural economy in spite of the various measures taken from time to time. The First Five Year Plan period witnessed an increasing trend in production. The average rate of increase in production of foodgrains was 9.6 per cent per annum, as against population growth of 0.94 per cent per annum. The yield per acre of principal crops like rice, wheat and maize increased significantly due to area and yield effect. The yield of rice went up from 4.9 quintals per acre in 1950-51 to 5.7 quintals per acre in 1955-56, while the net area sown increased from 1536 thousand acres in 1950-51 to 1681 thousand acres in 1953-54. However, these relativities are not enough. Much heated debate on stagnancy of agricultural growth has raised many doubts over the period of time. On analysing the data, the production of rice has actually stepped up from 2288 thousand quintals in 1951-52 to 5219 thousand quintals in 1977-78 maize from 989 thousand quintals in 1951-52 to 3600 thousand quintals and wheat from 409 thousand quintals to 1859 thousand quintals during the reference period. However, the production figures show volatile fluctuations. Since it would be misleading to compare the production data of two extreme years. In order to arrive at the growth rates, we have divided the period under study into five components each comprised of five years to even out the yearly fluctuations. The same has been applied to the area as well. The data (Table Appendix I) reveals that absolute foodgrains production has increased from 5341 thousand quintals in 1951-22 to 1955-56 to 9554 thousand quintals during 1971-72 - 1975-76. Its components rice, wheat and maize have registered a steady increase from 2646, 581, 1419 thousand quintals during the first five years to 4104, 1715 and 3443 thousand quintals respectively during the last five years of the period under study. Corresponding to absolute increase in production, the productivity too has registered a persistent upward trend ; in case of rice from

TABLE 2
Growth Rates of Area under Food Crops in Jammu and Kashmir with Regression Equation

Crops	Function	Growth rate	S.E	Value	D.F	Level of Significance	Regression Equation
Rice	Linear	5.46	2.67	2.004	2	0.015	$Y = 462.94 + 5.46$
	Exponential	1.02	1.28	1.68	2	0.05	$Y = (466.0764) (1.0102)^t$
Wheat	Linear	6.70	3.81	2.76	2	0.01	$Y = 308.59 + 70T$
	Exponential	2.00	4.61	1.60	2	0.10	$Y + = (286.98) (1.0230)^t$
Maize	Linear	10.55	4.63	6.85	2	0.05	$Y = 414.44 + 10.55t$
	Exponential	3.00	2.54	2.16	2	0.025	$Y = (398.10) (1.0300)^t$
Foodgrains	Linear	18.40	6.71	1.91	2	0.05	$Z = 1525.84 + 18.40t$
	Exponential	0.74	5.38	2.76	2	0.01	$Y = (1594.04) (1.0074)^t$

5.27 quintals per acre to 7.24 quintals per acre; wheat from 1.82 quintals per acre to 3.75 quintals per acre; maize from 3.29 quintals per acre to 5.12 quintals per acre and finally food grains from 3.89 quintals per acre to 4.49 quintals per acre during 1951-52—1955-56 to 1971-72—1975-76, The rice productivity has gone up by 30 per cent. Wheat more than two times, maize 36.47 per cent and foodgrains 15.4 per cent. If we exclude the last five years the maize has registered an unprecendent increase, that is by 72 per cent. In order to have more statistical precision we have used the following models to arrive at the annual growth rates.

1. Simple growth model
2. Additive model
3. Trend model
4. Decomposed model

Suppose we have a time series data Y_t on characteristic Y . The change in Y per unit of time ' t ' is denoted by

$$\frac{dY_t}{dt} \text{ or } (Y_t - Y_{t-1}) \dots \quad (1)$$

according as ' t ' varies continuously or takes only discrete values. In the bivariate time series the growth are retardation

in Y at ' t ' will depend upon if $\frac{dyt}{dt} \left. \vphantom{\frac{dyt}{dt}} \right\} 0$. It is this rate of change in Y per unit of time ' t ' which is termed as growth rate,

$$G_t = \frac{1}{Y_t} \cdot \frac{dY_t}{dt} \text{ or } \frac{Y_t - Y_{t-1}}{Y_t} \dots \dots \dots (2)$$

We have worked out on five yearly average basis by fitting the above model to the data and found the growth rates during the reference period by comparing two terminal periods as 55.08 194.91, 144.75 and 78.88 for rice, wheat and maize and foodgrains respectively. However, it does not account for full time series volatile fluctuations, we have therefore, used additive model as well. In our four crop model we have decomposed data (Appendix I) in to the following version :

$$Y_1 = P_1 + W_1 + M_1$$

$$Y_2 = P_2 + W_2 + M_2$$

$$Y_3 = P_3 + W_3 + M_3$$

$$Y_4 = P_4 + W_4 + M_4$$

$$Y_5 = P_5 + W_5 + M_5$$

$$(Y_2 - Y_1) = (P_2 + W_2 + M_2) - (P_1 + W_1 + M_1) \quad \dots(3)$$

$$(Y_3 - Y_2) = (P_3 + W_3 + M_3) - (P_2 + W_2 + M_2) \quad \dots(4)$$

$$(Y_4 - Y_3) = (P_4 + W_4 + M_4) - (P_3 + W_3 + M_3) \quad \dots(5)$$

$$(Y_5 - Y_4) = (P_5 + W_5 + M_5) - (P_4 + W_4 + M_4) \quad \dots(6)$$

Where,

Y_1 = production of total foodgrains between 1951-52 to 1955-56

Y_2 = production of total foodgrains between 1955-56 to 1960-61

Y_3 = production of total foodgrains during 1961-62 to 1965-66

Y_4 = production of foodgrains during 1966-67 to 1970-71

Y_5 = production of foodgrains during 1971-72 to 1975-76

P = Rice production

W = Wheat production

M = Maize production

The changes which are discernible from the above model reveal that output of all food crops has increased significantly during the first two decades. Although there was a severe drought during 1966-67, yet it did not affect the decennial growth of output. However, the maize output growth received a setback and it is only in late sixties and early seventies that rice and maize did not show the expected growth.

The most reliable estimates are provided by linear and exponential growth equations. These two equations (Appendix II) show that the State agriculture has not been stagnant during the period under study. Although the area under rice has increased by 1.02 per cent during 1951-52 to 1977-78, yet the production of rice and its productivity has registered an annual growth rate of 2.33 per cent and 2 per cent respectively. The growth rate of wheat production and its productivity has been of the order of 4.72 and 3.51 per cent per annum respectively, while the rate of growth of maize has been highest, that is, 8.44 per cent per

annum during the said period. The relationships are the best fits as the determination coefficients were found very high.

The aforesaid results are confirmed by even Minhas-Vaidyanathan variety of decomposed model. In this model we have used the following definitions :

$$P_o = A_o \sum_i^n W_i C_{io} Y_{io} \quad \dots(7)$$

$$P_t = A_t \sum_i^n W_i C_{it} Y_{it} \quad \dots(8)$$

Where,

A_t = Gross cropped area in 1979-80

A_o = Gross cropped area in 1951-52

Y_{io} = Yield (in quintals) per acre in 1951-52

Y_{it} = Yield (in quintals) per acre in 1979-80

C_{io} = Cropped area as percentage of gross cropped area

C_{it} = Cropped area as percentage of gross cropped area in 1979-80

W_i = Farm whole process in 1951-52 from 1961 Census and procurement price in 1979-80

We can split up increase in crop production over time into their component elements in the following manner.

$$P_t - P_o = (A_t - A_o) \sum_i^n W_i C_{io} Y_{io} + A_t \sum_i^n W_i C_{io} (Y_{it} - Y_{io}) + A_t \sum_i^n W_i Y_{io} (C_{it} - C_{io}) + A_t \sum_i^n W_i (Y_{it} - Y_{io}) \quad \dots(9)$$

The annual average growth rate works out to be, on the basis of the above model, 5.42 per cent. If we assume 100 as total output growth the share of components will be as follows :

Growth of output = 157.31 per cent

Area effect = 31.23 per cent

Yield effect = 70.98 per cent

Cropping pattern effect = 2.76 per cent

Interaction effect = 0.85 per cent

During 1964-65—1979-80 the foodgrains production has grown at a rate of 2.8 per cent per annum.

Foodgrains Availability

The local supply gap continues to be of the order of 2.5 lakh tonnes a year. NCAER estimated that the State needed 48 thousand tonnes of foodgrains⁶ to meet the supply gap. As against this the net imports in 1963-64 amounted to 88 thousand tonnes. This gives the consumption of 590 grams cereals per capita per day. According to the FAO estimates for the year 1969-70 for the country as a whole the State per capita consumption of cereals is on the higher side. As per the NSS estimates the per capita food consumption in 1964 was 678 grams per day. The Directorate of Evaluation and Statistics, Jammu and Kashmir Government arrived at per capita consumption of foodgrains 622 grams per day.⁷ According to the Development Review Committee Report the per capita availability of foodgrains has declined from 603 grams per day in 1967-68 to 548 grams per day in 1974-75. Compared of the national average of 408.5 grams per day in 1974-75 the consumption of State has been higher. From our estimates the per capita availability of foodgrains has declined from 662.3 grams per day in 1960-61 to 525.15 grams per day in 1976-77. Assuming 622 grams foodgrains consumption per capita per day to be a standard norm, the State will require 13.31 lakh tonnes of cereals in 1986 which means a deficit of 2.36 lakh tonnes compared with the production level of 1977-78. Since the State is not going to have a break-through in agriculture as the situation prevails today, 2 lakh tonnes of foodgrains shall have to be imported to meet the growing demand. The supply gap can be met by more capital investment on the farms. Our study shows only 67⁸ per cent of the growth potential of the crop sector has exhausted, while the capital efficiency on cereal farms is very low.⁹

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APPENDIX II

Growth Rates of Principal Crops in Jammu and Kashmir

Crops	Linear Growth		Exponential		Equations	R ²
	rate, 'b' Cossf	growth rate (b-1)X100	Linear	Exponential		
1. Rice						
Area	5.46	1.02	Y = 462.94 + 5.46X*	Y = (466.07)(1.0102)t*	0.89	
Production	80.12	2.33	Y = 2487.43 + 80.12X**	Y = (2691.53)(1.020)t*	0.91	
Productivity	0.08	2.00	Y = 2.33 + 0.08X*	Y = (3.36)(1.020)t**	0.87	
2. Wheat						
Area	6.70	2.00	Y = 308.29 + 6.70X**	Y = (286.98)(1.0230)t*	0.81	
Production	20.18	4.72	Y = 406.75 + 50.18X**	Y = (237.03)(1.0472)t*	0.92	
Productivity	0.09	3.51	Y = 1.40 + 0.09X***	Y = (1.56)(1.0351)t 1**	0.88	
3. Maize						
Area	10.55	3.00	Y = 414.44 + 10.55X**	Y = (398.10)(1.0300)t*	0.91	
Production	102.25	8.44	Y = 1320.99 + 102.25X*	Y = (693.26)(1.0844)t*	0.86	
Productiuity	0.10	2.94	Y = 3.26 + 0.10X*	Y = (2.99)(1.0294)t*	0.94	

*Significant at 5 per cent probability level

**Significant at 1 per cent probability level

Working Conditions of Child Labour in Carpet Weaving Industry of Kashmir

KHURSHID ALI*

THE present paper is an attempt to study the working conditions of child labour in the Carpet Weaving Industry of Srinagar. The study is based mainly on field work of the author. For this purpose ten Carpet Weaving Factories were selected, on the basis of purposive sample. Information and data were generated in the form of structured questionnaires and personal interviews conducted in 1984-85. The Factories selected for study are :

1. Markazi Behboodi Khawateen (Women Welfare Centre)
2. Cottage Industry
3. C.A.E. Carpet Factory
4. Kishtawari Carpet Factory
5. G.O. Carpet Factory
6. The Indo-Kashmir Carpet Factory
7. Faraghan Carpet Factory

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8. John Carpet Factory
9. The Oriental Carpet Factory
10. The East-India Carpet Factory

The number of children working in these factories ranges from six in the East India Carpet Factory to 40 in Markazi Behboodi Khawateen. The children are supposed to work for 6 hours a day in the Oriental Carpet Factory, Cottage Industry and Markazi Behboodi Khawateen. The East India Carpet Factory and the Indo-Kashmir Carpet Factory has a workshift of eight hours per day and the rest of the factories have fixed a seven hours work day for the child labour in their factories.

The information gathered during the course of field work reveals that poverty of the family is the leading compulsion for children to go for work. This is followed by their lack of interest in studies, the absence of congenial atmosphere for studies in their families and the willingness of the parents forcing their young ones to go in for some gainful job in factories.

A further analysis into the economic compulsions of the families sending their children for work reveals that an overwhelming proportion of children working in factories come from families whose income is below Rupees five hundred per month. Table 1 explains the economic compulsions of the families in different income groups :

TABLE 1

Economic Status of the Family of the Working Children

<i>S. No.</i>	<i>Family income Per month</i>	<i>Percentage of the Number of children Falling Under this Group</i>
1.	Below Rs. 500	46.8
2.	Rs. 501-900	45.9
3.	Rs. 901 and above	7.3

It may be seen from Table 1 that lower the income, greater is the probability of the children going for work in factories. For example 46.8 per cent of children going for work come

from families in which the per month income is less than Rupees five hundred. Also families whose monthly income ranges from Rs. 500 to Rs. 900 contribute for 45.9% of the child labour force in the factories under study while an insignificant proportion of children (7.3 per cent) working in the factories come from families whose per month income is above Rupees nine hundred. Thus it may be concluded from the above discussion that the main cause of child labour in Srinagar is poverty of the parents.

Working Conditions

Before probing into the working conditions of the children it is pertinent to highlight the mode of wage-payment followed by the factories under study. The children are paid on time-wage basis in all the factories surveyed. The wages range from Rs. 5.15 to 5.20 per worker per day in the factories. Three factories, viz. C.A.E. Carpet Factory, The Oriental Carpet Factory and Cottage Industry pay Rs. 6.20 per child worker per day. As against this Markazi Bahboodi Khawateen and East India Carpet Factory pay at the rate of Rs. 6 per day per worker. The Indo-Kashmir Carpet Factory pays Rs. 5.20 per worker per day as wages. The rest of the factories have been reported to be paying Rs. 5.15 per worker as daily wages. However, it is worth mentioning that the wages vary from age to experience. Consequently, the more experienced and aged child worker gets more than the younger and experienced hands.

So far as the facilities available to the child labour in the factories is concerned the study has put forth interesting revelations. Out of the ten factories under study, only one is providing resting room and educational facilities to the children. Transport facilities are however, not provided to the children in any of the factories. Four factories are providing canteen facilities and two are having radio/television for the benefit of the children. It seems gratifying to note that all the ten factories have bathroom/toilet facilities available for the working children. Besides there is a provision of rest for one hour during work, allowed in all the factories.

Obviously, it is unfortunate to learn that education—an important necessity—is not provided to the children who are working in carpet factories: Radio and television which are

equally important media of communication and which impart a great deal of knowledge and technical skill are also not provided as a result of which the children are lagging behind in the field of knowledge. It is a fact that the working children hail from the lower income families and thus their diet lacks nutritious food. Consequently, they have poor physique and a low health status. Most of the factories do not provide adequate canteen facilities to compensate the dietary deficiencies of children. Moreover, they do not carry any kind of supplementary diet programme for the children. Similarly, recreational facilities in the factories are virtually non-existent, exhibiting thereby the poor working conditions for the tender-aged workers.

Another indication of the deplorable working condition of the children in the factories is about their personal hygiene. It has been observed that the skin of the children is not satisfactory in look. On personal examination it was seen that their skin is generally very rough, cracked and unclean. Their teeth are yellow and they have bad-breath. Also they are ill-clad. Their clothes are generally patched and dirty.

The study has made interesting revelations regarding the place of work of the children. The children are working in the rooms and during the course of survey the condition of the rooms in the factories was noticed as given in Table 2 :

TABLE 2
Condition of the Working Place of Children

S. No.	Condition of Room	No. of Factories	
		Yes	No.
1.	Dark	2	8
2.	Crowded	—	10
3.	Stinking	—	10
4.	Hygienic	3	7
5.	Seating Arrangement	12 (benches)	8 (floor)
6.	Ventilation	3 (good)	7 (not good)

Table 2 reveals that only in two factories there is a good seating arrangement (if it can be safely called so) i.e. the children

sit on benches. In rest of the factories they sit on floor for work. This is a very uncomfortable position for child worker which may result in the children falling prey to beri-beri, back-ache, pain in the joints and stomach ulcer.

Besides, a carpet-weaving worker during his work-period is exposed to different types of pollutants like fibres, dust and dyes. These have an adverse effect on child health. Also, the worker is exposed to different stresses like sitting at one place, confined to a room for a full day. The children feel strain on their eyes as they have to look continuously at the same object, thereby affecting their eyesight. Many children are believed to be suffering from many diseases. This is especially so as their tender-organs shall not be bearing the tremendous strains of work, besides the deprivation of exercises and fresh air. Malformation of bones is another distressing result of the tender bones put under about 8 hours stress of every day (6 days a week).

Furthermore the children perform their duties away from sunshine and fresh air. There are poor lighting, bad ventilation and poor environmental hygienic conditions under which the children have to work. The workers are not immunised against the communicable diseases and they are not visited by a physician. Also the children are not covered under the Health Insurance Scheme.

Conclusion

The children working in Carpet Weaving Industry of Srinagar come mainly from lower class families. They are thus forced to abandon their studies to take up a job. But in return they get inadequate, ill-balanced meals for the hard task and the sacrifices they render. Their wages are also fairly low. In general the working conditions are unsatisfactory and unhygienic. The basic facilities like provision of education, training, canteen, recreation, radio/television, transport and medical care are sadly missing. The rooms in which the children work are not hygienic and do not have good ventilation system. They sit in a very uncomfortable position resulting into various types of diseases in the children. The problem of child labour in Srinagar is acute and demands immediate attention of the planners and decision makers.

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Transport Network Efficiency : A comparative Analysis Between Jammu Division and Kashmir Divisions

MONDIRA DUTTA*

THE importance of the role of transport in regional development can be very well attested by the fact that it is a matter of much theoretical interest and practical significance. It has received considerable attention over many years in both the developed and less-developed countries. It is well known that economic development is unevenly spread over the surface of the earth and tends to cluster in certain pockets. Transport development serves as the skeleton which connects these pockets, and helps the hinterland to make the best use of the 'trickling down effects.' In other words "transport network "provides the channels through which economic links are formed in space".¹ The transport system is therefore, a necessary condition for regional specialization and in developing the inter-regional dependencies leading to region formation. "The production of goods cannot be considered as a completed process unless these products have been delivered to the consumer".² This

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is only possible with the help of transport development which would ultimately lead to territorial division of labour.

Every aspect of transport study necessarily pertains to either of the following three components. The transport network, the flow on the network and lastly the relationship of network and flow in the development process of the regional economy. The present study will be confining to the first component, that is, the transport network. The transport network may be defined as a set of geographical locations of a system of routes which helps in bridging the gap of time and space. Such analytical studies have become an important part of geographical study only in relatively recent years. Formerly, transport network tended to develop in a somewhat random and often unrelated fashion, but the recent developments and changes in transport studies focussed attention upon the analytical study of networks. The study of networks is embraced in graph theory which basically deals with various indices expressed in terms of several parameters like, route mileage, number of edges, vertices, independent graphs etc. Some of these indicators are positive while some are negative. A composite of these indicators reflects the hierarchical levels of efficiency.

Area of Study

The regions of Jammu and Kashmir have been selected for the present study, due to a number of favourable reasons. Both the regions have more or less semi-closed systems of economy, having little interactions with the other parts of the country. The main mode of transport being the road ways in both these regions, the comparative analysis becomes more balanced by the mere fact that it will be mono-modal in content. Further the total number of settlements in the two regions are also fairly less giving a balanced picture. All this facilitates the comparative analysis to be relevant and justified.

In spite of the two regions striking similarities, there exists a lot of dissimilarities in its physical, economic, social, cultural, and other factors. More than half of the area of the state is barren. The state mainly consists of three regions, Jammu, Kashmir and Ladakh. The region of Ladakh has been

excluded from the present study. The state consisting of the three regions presents a picture of a three-storeyed house with three distinct physiographic divisions. The province of Jammu with the Siwaliks and the other hills forms the first storey. The Siwaliks are overlooked by the huge mountain ranges of the middle Himalayas which are clothed with thick vegetation. The Pir-Panjal mountain ranges crosses through the Jawahar Tunnel opening into the oval valley of Kashmir.

"The Kashmir Valley, by virtue of its central location in the state and with advantageous convergence of route ways in various directions within the valley and outside, has throughout its long history functioned and prospered as the main focal centre."³ The Central Asian route debouched on to it through the Sindh Valley. The Jhelum was also an important transport artery. The national highway and various other roads radiating in all directions have revolutionized the regional transportation.

Objectives

The main objectives of the present study are to :

- (i) identify the hierachical pattern of network efficiency, tehsilwise in the regions of Jammu & Kashmir.
- (ii) study the inter and intra-regional variations in terms of network efficiency on the basis of various indicators and their composite index.
- (iii) formulate the outlines of developmental policies for stimulating the economic development of the area.

Data Base

The road transport maps for the year 1981 of Kashmir and Jammu regions were obtained from the department of Road and Building Construction, Srinagar and Jammu respectively.

The 1981 tehsil boundaries for Jammu & Kashmir were obtained from the Directorate of Census Operations, Rajbagh, Srinagar.

The number of rural and urban settlements (according to their classes) for all the tehsils was obtained from the District Census Handbooks 1971.

Methodology

The first task was to superimpose the 1981 tehsil boundaries on the road map of Jammu and Kashmir regions. Once the tehsil boundaries were incorporated the parameters of graph theory indices were calculated from the map.

Parameters like, number of edges (E), number of vertices (V), and number of independent graphs (P) were found from the map for all the tehsils.

The road length in Kms. was also obtained by measuring the total roads in a tehsil with the help of a rotameter.

The total number of settlements of all the tehsils was also computed. The various urban settlements ranging from class I to class VI towns were given weighted values of 6, 5, 4, 3, 2 and 1 respectively. The various weightages were multiplied to the number of the towns existing in that particular class and finally the sum total was added to the total rural settlements to obtain the total settlements, in all the tehsils. For example, the tehsil of Jammu has 354 rural settlements, I class I town, I class IV town and I class VI town and I class IV town. So the total settlements in the tehsil of Jammu will be $(354 + (16) + (13) + (12) + (11)) = (354 + 6 + 3 + 2 + 1) = 366$. Thus the total number of settlements was derived for every tehsil.

The next step was to compute the various indicators, selected in the study. A series of ten indices were chosen in all for this analysis. They were :

- (i) Density of roads per settlement
- (ii) Route length in Kms.
- (iii) Alpha index
- (iv) Beta index
- (v) Gamma index
- (vi) Theta index
- (vii) Eta index
- (viii) Number of independent graphs
- (ix) Composite of indicators (iii) to (viii).
- (x) Final composite of all the indicators (i), (ii) and (ix)
- (i) The route length per tehsil obtained with the help of a rotameter was made scale free by dividing each observations by the mean for the entire series.

- (ii) The density of roads per settlement was computed for a tehsil by dividing the road length by total settlements. This was later made scale free.
- (iii) The index of Alpha (α) was computed by the following formula—

$$\alpha = \frac{e - v + p}{\frac{v(v-1)}{2}} = (v-1)$$

It shows the ratio of actual number of circuits to total possible number of circuits. The index of Alpha is a positive indicator, whose value varies from 0 to 1. This indicator was also made scale free.

- (iv) The Beta (β) index was calculated using the formula—

$$\beta = \frac{e}{v}$$

(3) It gives the average number of edges available per vertex. The value may vary from 0 to 00. The index being a positive indicator, the biasness of scale was removed by dividing each observation by its mean.

- (v) The Gamma (γ) index is a relative index of connectivity of a network expressed as a ratio of actual number of edges to total number of edges possible in the network. It is defined as :

$$\gamma = \frac{e}{v(v-1)}$$

The value lies between 0 to 1 and the indicator is a positive one. The indicator was also made scale free.

- (iv) The Eta (ϵ) index gives the average length of an edge and shows the relationship between transportation network. It is expressed as :

$$\epsilon = \frac{M}{e}, \text{ where } M = \text{total mileage.}$$

The eta index is a negative indicator and therefore the biasness of scale was removed by dividing the mean by each observation.

(vii) The Theta (θ) index gives the average length of routes of a network to its total number of vertices and is defined as :

$$\theta = \frac{M}{V}$$

This indicator is a positive index and was made scale free accordingly.

TABLE 1

Transport Network Efficiency Indicators
1983

S. No.	Tehsil Names	Road Length (in kms)	Rural Settle.	Total Settle.	Density/ Settle.	Graph Theory Indices	Compo-site Index
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
I. Jammu Region							
1.	Jammu	51.48	354	366	.140	7.23	2.06
5.	Samba	93.34	333	335	.279	6.85	2.82
3.	R.S. Pora	41.83	194	197	.212	7.59	2.11
4.	Akhnoor	53.90	227	229	.235	9.86	2.67
5.	Bishnah	30.57	117	118	.259	4.93	1.64
6.	Kathua	62.92	183	190	.331	5.12	2.24
7.	Billawar	34.27	65	66	.519	5.25	2.21
8.	Basohli	38.78	73	74	.524	4.47	2.16
9.	Hiranagar	43.45	266	267	.162	7.18	1.98
10.	Udhampur	82.47	194	201	.41	4.62	2.59
11.	Ramnagar	41.84	132	133	.31	4.81	1.86
12.	Reasi	42.64	177	178	.24	4.78	1.74
13.	G. Gulabgarh	20.92	78	78	.27	4.01	1.38
14.	Chenani	10.05	47	48	.21	12.97	2.51
15.	Poonch	38.21	88	91	.42	5.97	2.19
16.	Mendhar	15.28	89	89	.17	6.40	1.49
17.	Rajouri	41.02	145	148	.28	4.40	1.73
18.	Budhal	41.83	73	73	.57	6.56	2.60

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
19. Kalakote	8.04	68	68	.12	4.59	1.02	
20. Nowshera	30.57	57	58	.53	7.08	2.46	
21. Sunderbani	15.28	42	43	.36	4.93	1.61	
22. Doda	19.79	150	154	.13	7.45	1.64	
23. Kishtwar	14.91	203	205	.07	15.27	2.67	
24. Bhaderwah	29.69	201	203	.15	6.66	1.69	
25. Ramban	24.14	94	95	.25	6.74	1.81	

II. Kashmir Region

26. Pahalgam	128.74	65	67	1.92	10.05	6.72
27. Anantnag	270.37	260	270	1.00	7.17	6.57
28. Bijbehara	N.A	N.A	N.A	N.A	N.A	N.A
29. Doru	N.A	N.A	N.A	N.A	N.A	N.A
30. Kulgam	159.65	301	303	.53	6.39	4.10
31. Shopiyan	80.47	227	229	.55	4.50	2.42
32. Pulwama	122.31	235	239	.51	5.81	3.46
33. Tral	41.84	79	82	.51	6.24	2.44
34. Gander- bal	135.18	137	138	.98	4.21	4.24
35. Srinagar	83.68	63	60	1.21	8.00	4.13
36. Chadura	57.94	134	135	.43	7.00	2.63
37. Badgam	122.31	175	176	.69	4.86	3.64
38. Beerwah	96.00	175	175	.59	6.94	3.13
39. Bandipore	91.41	94	96	.95	4.65	3.65
40. Sonawari	148.06	73	73	2.03	5.66	6.72
41. Sopore	141.62	136	140	1.01	6.96	4.80
42. Baramulla	206.00	163	170	1.21	7.92	6.17
43. Gulmarg	57.94	101	102	.57	4.58	2.51
44. Uri	77.25	91	92	.84	7.33	3.67
45. Handwara	196.34	179	183	1.07	4.83	5.32
46. Karnah	28.97	46	46	.63	6.83	2.57
47. Kupwara	141.62	135	137	1.03	7.46	4.91

(viii) The number of independent graphs (p) per tehsil was computed from the road map. This is considered as a graph having its own independent system, compact within itself.⁵ It is a negative indicator of network efficiency and the index was made scale free as eta index.

(ix) All the indicators from (iii) to (viii) were graph theory indicators, so a composite index of all these scale free graph theory indicators were computed. The scale free values of indicators (iii) to (viii) were added tehsilwise to give the composite picture of graph theory indicators.

(x) The final composite index was obtained from the three indicators, viz., the route length in kms., the road density per settlement and the composite index of graph theory indicators. The composite index of these three indicators were again made scale free before being aggregate to the final composite index.

A series of four maps was prepared on the basis of the indicators selected.

Each of these indicators was arranged in an ascending order and grouped into four hierarchical levels of network efficiency utilising the statistical technique of quartiling and also considering the break points in series. The cartographic technique of Choropleth was adopted to shade the various hierarchical levels of network efficiency in the two regions of Jammu and Kashmir.

Network Efficiency on the basis of Route length per tehsil

A close observation of tehsilwise road length reflects wide variations in the two regions of Jammu and Kashmir. All the tehsils of Jammu region excepting Jammu and Udhampur tehsils registered the least score in term of this indicator. On the other hand, most of the tehsils of Kashmir region registered a very high level of route length.⁶ Such a large scale variations between the two regions could be attributed mostly to the contrasting relief features present in these two regions. Almost the entire Jammu region except for few tehsils in the south have rugged topographic features, which act as a hurdle for the development of roads. On the other hand most of the inhabited areas of the Valley have homogeneous relief features, which are mostly plains. Another reason for such a contrast level of network efficiency could be attributed to the density of settlement distribution. Nearly 3000 settlements are located in Kashmir region

occupying only 33% of total area of Jammu and Kashmir regions together.⁷

However among the tehsils of Kashmir large scale variations were also observed. The tehsils of Handwara, Baramulla and Anantnag registered very high road length. Baramulla and Handwara have a high level of network efficiency because of its importance from the defence point of view. The reason which could be attributed to Anantnag's high network efficiency are several in number. Anantnag is the oldest trading centre of Kashmir Valley and is located in the rice bowl of the region. Within its hinterland it encloses several nodes of tourist attraction and thus has a stream of tourist flow to its area every year. The map also reveals that high road length in Kashmir region is mostly in the core areas of the Valley where diversified economic activities are pursued.

Network Efficiency on the basis of Road Density per settlement

The road density per settlement was computed in order to overcome the lacuna in the previous indicator which neither considers the area, the population nor the settlements. Hence the present indicator is more refined as compared to the earlier one and will reflect the reality to a considerable extent. This indicator reveals a low level of network efficiency in the entire area of Jammu region. The reason for such a picture as discussed in the previous section can be attributed to the very poor development of roads. On the other hand Kashmir region shows two clearcut divisions in terms of this indicator. The northern belt of Kashmir region including the tehsils of Kupwara, Bandipore, Handwara, Sopore, Sonawari, Ganderbal, Srinagar, Pahalgam and also one southern tehsil namely Anantnag clearly has a high level of network efficiency as compared to its southern counterparts. The northern parts of Kashmir region mostly consists of the international border, thus resulting in a high road length. This fact alone might have not led the area to emerge as one with high network efficiency, had it not been for its less number of settlements. It may be pointed out that these areas are not only highly undulating but also have highly mountainous relief resulting in less number of settlements.

Thus the tehsils show a high density of roads. On the other hand the southern tehsils of Kashmir in spite of high road length shows a low level of network efficiency because of the fact of its possessing an equally large number of settlements. Thus the low level of network efficiency in this area should not be accepted in totality. There is a tremendous resemblance between the first two indicators whenever there is high road length, there is high density, excepting in a few tehsils of Kashmir where the number of settlements are also equally high.

Network Efficiency on the basis of Graph Theory Indices

This index includes six graph theory indicators which has been discussed at length in the methodology. The six indicators were namely alpha index, beta index, gamma index, theta index, eta index, and number of independent graphs. On the basis of this indicator the picture is somewhat distorted. The highest level of network efficiency are in the tehsils of Kishtwar, Chenani, and Akhnoor all belonging to the region of Jammu and the tehsil of Pahalgam belonging to the region of Kashmir. All these tehsils have a linear pattern of road network because of which the number of nodes are very low resulting ultimately in the high values of gamma index. In case of other graph theory indicators these tehsils do not possess high values.

A high level of network efficiency is also found in terms of continuous belts scattered mostly in the eastern and western tehsils of Jammu region and central areas of Kashmir region. The western tehsils of Jammu namely Nowshera, Jammu, R.S. Pora, Samba and Hiranagar are fairly developed in terms of both industry as well as agriculture. This area is directly linked with the plains outside the state. The eastern belt of Jammu region including the tehsils of Doda, Ramban and Bhaderwah are all fairly developed tehsils in terms of this indicator, as most of the settlements have been provided with road facility.

The central areas of Kashmir region having a high network efficiency include mainly two pockets. The first pocket is that of Karnah and Kupwara which have a linear pattern of road network. The second pocket includes the tehsils of Uri, Sopore, Baramulla, Srinagar, Beeru, and Chadura. Most of

these tehsils fall in the fruit bowl of Kashmir and have diversified base of economy. Small scale handicraft activities and horticulture activities are dominant in these tehsils. The tehsil of Uri also has a linear pattern of road network like Karnah and Kupwara. The tehsil being in the border area has most of the settlements connected with road network linkages. Srinagar being the largest urban centre of the state occupies a pivotal position in terms of administrative, trade and service activities.

Network Efficiency on the Basis of Composite Index

The levels of network efficiency on the basis of composite index show very slight variations between the tehsils of Jammu region. The level of network efficiency is only slightly high in a few tehsils like Kishtwar, Jammu, and its hinterland, and the southern tehsils of Kathua and Basohli. However, even in these tehsils the values are not very high when compared to other tehsils in the region. There is more or less a homogeneous picture maintained all through the Jammu region depicting low level of network efficiency.

The Kashmir region on the other hand shows wide intra-regional variations between its tehsils. Most of its tehsils have a high level of network efficiency as compared to the Jammu region. The highest level of efficiency is found in clusters of two pockets. The first includes the northern tehsils of Kupwara, Handwara, Sopore, Sonawari, and Baramulla. The second pocket consists of only two tehsils *i.e.*, of Pahalgam and Anantnag. The tehsils located in between these two pockets, mostly show their levels of network efficiency on the higher side. The two pockets of highest network efficiency mostly consist of horticulture belt, the tourist attraction area or the border area. Kupwara and Handwara in the north are located in strategic positions from the defence point of view. Sopore, Sonawari and Baramulla are the major agricultural and horticulture belts of the Valley. The tehsils of Pahalgam and Anantnag are very rich in terms of tourist potentials as well as for diverse economic activities like agriculture and handicraft activities. The study clearly indicates that Kashmir region has a far higher level of network efficiency as compared to Jammu region. The main

TABLE 3

Transport Network Efficiency Indicators
(Scale Free Values)

<i>S. No.</i>	<i>Tehsil Name</i>	<i>Road Length</i>	<i>Density/ Settlement</i>	<i>Graph indices</i>	<i>Composite index</i>
(1)	(2)	(3)	(4)	(5)	(6)
I. Jammu Region					
1.	Jammu	.70	.25	1.11	2.06
2.	Samba	1.27	.50	1.05	2.82
3.	R. S. Pora	.57	.38	1.16	2.11
4.	Akhnoor	.73	.43	1.51	2.67
5.	Bishna	.42	.46	1.52	2.40
6.	Kathua	.85	.59	.79	2.24
7.	Billawar	.47	.93	.81	2.21
8.	Basohli	.53	.94	.69	2.16
9.	Hiranagar	.59	.29	1.10	1.98
10.	Udhampur	1.12	.73	.74	2.59
11.	Ramnagar	.57	.55	.73	1.86
12.	Reasi	.58	.43	.73	1.74
13.	Gulabgarh	.28	.48	.62	1.33
14.	Chenani	.14	.38	1.99	2.51
15.	Poonch	.52	.75	.92	2.19
16.	Mendhar	.21	.30	.67	1.73
17.	Rajouri	.56	.50	.67	1.73
18.	Budgal	.57	1.02	1.01	2.60
19.	Kalakot	.11	.21	.70	1.02
20.	Nowshera	.42	.95	1.09	2.46
21.	Sunderbani	.21	.64	.76	1.61
22.	Doda	.27	.23	1.14	1.64
23.	Kishtwar	.02	.13	2.34	2.67
24.	Bhaderwah	.40	.27	1.02	1.69
25.	Ramban	.33	.45	1.03	1.81
II. Kashmir Region					
26.	Pahalgam	1.75	3.43	1.54	6.72
27.	Anantnag	3.68	1.79	1.10	6.57

(1)	(2)	(3)	(4)	(5)	(6)
28.	Bijbehara	N.A	N.A	N.A	N.A
29.	Doru	N.A	N.A	N.A	N.A
30.	Kulgam	2.17	.95	.98	4.10
31.	Shopiyan	1.10	.63	.69	2.42
32.	Pulwama	1.66	.91	.89	3.46
33.	Tral	.57	.91	.96	2.44
34.	Ganderbal	1.84	1.75	.65	4.24
35.	Srinagar	1.14	2.16	1.23	4.13
36.	Chadura	.79	.77	1.07	2.63
37.	Badgam	1.66	1.23	.75	3.64
38.	Beerwah	1.18	.89	1.06	3.13
39.	Bandipora	1.24	1.70	.71	3.65
40.	Sonawari	2.02	3.63	.87	6.52
41.	Sopore	1.93	1.80	1.07	4.80
42.	Baramulla	2.80	2.16	1.21	6.17
43.	Gulmarg	.79	1.02	.70	2.51
44.	Uri	1.05	1.50	1.12	3.67
45.	Handwara	2.67	1.91	.74	5.32
46.	Karnah	.39	1.13	1.35	2.57
47.	Kupwara	1.93	1.84	1.14	4.91

reason for such a picture could be probably attributed to the difficult terrain and relief features existing in the Jammu region.

Conclusion

The present study thus clearly depicts that Kashmir region emerges as more developed in terms of network efficiency in comparison to the Jammu region. All the four sets of indicators maintain consistently a high network efficiency in Kashmir region. However, in case of graph theory indices, the picture is somewhat different as the pockets of high network efficiency are concentrated in the Jammu region. This too is only limited to three tehsils, namely Akhnoor, Chenani, and Kishtwar. The main reason for such a high level of network efficiency can easily be attributed to its linear pattern of network development having very little nodes. In terms of road length, these tehsils figure in the lowest category. The same is the case for road density per settlement. These tehsils, figure only in the third category in the final composite index. In the final composite

index, there is not even a single tehsil in Jammu region which falls in first or even the second category of high network efficiency. On the other hand only two tehsils of Kashmir region namely, Doru and Bijbehara fall in the least level of network efficiency. This result when analysed in the light of road length has striking resemblance.

It is unfortunate that Jammu region which may be considered to be more open as compared to Kashmir region has poorer system of infrastructure facilities. The major hindrance as pointed out earlier is the difficult topography. The region of Jammu, over the past decade has been coming up both industrially as well as in terms of primary economic activities. Therefore the region must not be neglected in terms of the provision of infra-structural linkages. The existing routes must be properly channelized and new routes must be incorporated as per the demands. The road density per settlement is inadequate as almost the entire area of Jammu falls in the lowest category.

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Declining Impact of Tourism Economy : A Case Study of Dal Lake

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DAL lake is one of the main elements that comprises the successful tourist formula that makes Valley of Kashmir an important and famous tourist resort. Though the lake is a very small one it plays an extremely important role in the socio-economic life of the valley and has traditionally been the centre of Kashmiri civilization since times immemorial. It contributes about 16 percent of the states income and about 160,000 people are provided employment.

Dal lake and its environs over the years have come to acquire a wide variety of infrastructural facilities for the comfort and entertainment of tourists, the principal among them being house boats and other types of tourist accommodation. Of the total number of tourists visiting Srinagar in 1982, 3.7 percent stayed in the house boats. A high percentage of foreign tourists stayed in house boats than domestic tourists (18.2 percent of the former and 2 percent of the latter). Among tourists

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infrastructural facilities mention must be made of a number of hotels and restaurants that have come up on the Dal lake. These hotels and restaurants specially cater to the needs of the tourists and add greatly to the attraction of the Dal lake.

It is evident that the importance of tourism in the local economy is very great. The receipts from this source provides a valuable income for a large number of people living on and around the Dal lake. Not only it is a source of income and provides employment, it also brings infrastructural development and helps regional development. The inflow of money through tourism in the local economy has a multiplier effect as it passes through various sections of the economy. A major direct effect of tourism relates to employment as the tourist industry is a labour intensive service industry and employs a large number of people and provides a wide range of jobs.

The tourist multiplier on the Dal lake mainly operates through the rent paid to the house boats and shikara owners. According to a survey conducted by the author in 1982 the total income accruing to the owners of all categories of house boats on an average is Rs. 50,000,00. To this sum must also be added the income from innumerable floating and stationary shops and emporia on the lake. Other income generating activities are agricultural production on the floating gardens and fishing. The survey reveals that the income from the former in 1982 was roughly Rs. 1,50,00,000 while from the latter around Rs. 750,000. Thus from all sources in 1982 an income of around Rs. 3,57,50,000 was realized. This is an enormous sum and it is obvious that the economic impact of the Dal lake on the people living on and around is tremendous. Most people, as a matter of fact, are entirely dependent on the Dal lake for their livelihood.

It appears that the attraction of the Kashmir valley for foreign tourist is decreasing. Though in absolute terms the number of foreign tourists visiting Kashmir has considerably gone up, as a percentage ratio of the total number of foreign tourists arriving in India, it has gone down. This is borne out by the fact that in 1951, 7.4 percent of all foreign tourists visited Kashmir, in 1980 this share had come down to 5.7 percent. The decreasing trend in the arrival of foreign tourists is due to the

fact that despite the natural scenic beauty and splendour, the valley rates low on the foreign tourists itinerary. Srinagar, the focal point of tourism in the valley ranks a lowly 12th behind such cities as Varanasi, Amritsar, and Madurai in attracting tourists. In 1982 only 6.8 percent of the foreign tourists visited the Kashmir valley while the share of Bombay, New Delhi, Madras and Agra was 60.4, 58.4, 24, and 21.4 percent respectively.

There is little doubt that tourism contributes positively to the economic development of a region. It gives a boost to the regional economy, creates new jobs and accelerates infrastructural development but at the same time it also puts the natural ecological balance under severe stress.

The unbalanced ecology of the lake has affected its tourist importance and has declined the rate of occupancy of the house boats. The main elements which directly affect the tourist flow are poor sanitary conditions of house boats as sewage is directly discharged into the lake. The water taken into the house boats is through water pumps (except in some delux boats) from the lake itself and which represents a major health hazard to tourists staying in house boats. Stomach disorders are mostly complained by the tourists staying there. Next is the weed growth and siltation which have affected lake water clarity and making it shallower day by day.

Though the lake provides livelihood for several thousand people, not much attention is being paid to the ecological implications of the booming tourist industry. Not many people know that the pristine charm of the lake is rapidly being eroded. It is strange that lake which is the centre of beauty in Srinagar and attracts lakhs of tourists every year is being slowly choked up by the very people who benenfit from it.

Increasing number of house boats without adequate and safe waste disposal arrangement, is another factor which is responsible for disturbing the ecology of the lake. The quality of water has greatly deteriorated on account of such unsanitary conditions. It is obvious that such unhygeinic conditions constitute a very serious health hazard for the tourists and other local people, who use the Dal water for different purposes.

The nutrient inflow from the catchment area is also giving rise to weeds. This enchanting lake is not only shrinking in area as a result of large scale dumping of waste material and extensive growth of rooted and floating macrophytes but is also becoming marshy as a result of large scale exploitation of its resources.

If the ecosystem of the lake continues declining at the present rate as a result of tourist oriented development programmes and no corrective measures are undertaken, it is feared that a point of near-eutrophication would be reached in a couple of decades. This would certainly lead to high revenue loss.

It is estimated that in case of the lake's eutrophication the potential loss of revenue would be about 38 percent. Similarly if hygeinic conditions collapse revenue loss may be more than 50 percent of the potential.

Geographical Problems and Development of Kandi Area in Jammu Division

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THE water scarce land known as Kandi area, in the division of Jammu stretches over the area between $32^{\circ} 20'$ to $32^{\circ} 55'$ N and $74^{\circ} 10'$ to $75^{\circ} 50'$ E lying mainly to the west of Ravi river. The width of the area ranges from 6 to 32 km and ranges in altitude from 300 m to 600 m above the mean sea level. Main drainage consists of rivers Chenab, Ujh and Tawi Basantar. Topographically the area is generally rugged, dry and broken, mainly rough being intersected by dry *nallahs*, khads and sometimes by deep ravines. There are gigantic escarpments separated by broad longitudinal strike valleys (Raina, 1971).

The climate is subtropical and has extremes of temperature with summer very hot the temperature upto 45°C and winters very dry and cold. Between July and September, monsoon period, the atmosphere is quite humid characterised with frequent torrential rains. The average annual rainfall is 100 cms. Vegetation comprises mainly scrub forests, thorny bushes.

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The whole of the area is full of pebbles, shingle, boulders, intermixed with clayey matrix and sometimes bands of sandstone. Geologically the area covers Siwalik formation (Wadia, 1961, Spate, 1964). Compositionwise the formations are alluvial detritus derived from the sub-aerial erosion of the mountains brought down by numerous rivers and streams having been deposited at the foot of the Himalayan Range (Wadia, 1961).

The most important feature of this area is that it has broken land relief and the water table is at a depth which varies from 100 m or above. The soil has the low moisture retaining capacity because of the sandy granular nature of the formations as well as the overall topographic configuration. This causes a chronic scarcity of water. This area is full of ravines which carries flood waters during the monsoons and the soil is exposed in the form of sandy beds by the seasonal streams which often degenerate into pebble spreads—a natural reason for the soil erosion (Spata, 1964).

Problems

The people of this area have destroyed the forests by felling trees for the purpose of making charcoal and so it has further aggravated the problem of soil erosion by exposing the already eroded tracts. The growth of the forests in this region is dependant upon the amount of moisture content which can be retained in the soil. The soil as such is porous because its composition is generally sand, shingle and boulder intermixed with some percentage of clayey loam at a few places.

Irrigation

As regards irrigation there is an acute shortage of water for agriculture and for drinking purposes. In Kandi area, the *nallahs* and streams are not perennial and can be drained off quickly. In the region of the north of Dhar-Udhampur road are some perennial springs. In this part, besides dry crops, such as maize, barley, etc. there is cultivation of paddy in some isolated areas. It is in the depressions or longitudinal valleys that rice cultivation has replaced wheat (R.L. Singh, 1971), otherwise the area is agriculturally poor.

It may not be out of place to mention that besides rainfall the other natural sources for developing irrigation can be the use of water from the perennial rivers such as Ravi, Chenab, Basantar, Tawi and Ujh. The people living in Kandi area are very hardy and it would be appropriate to mention that migration of nomadic tribes and clans has taken place in the past. Gujars and Bakarwals with their large stock of buffaloes came earlier (probably early in the century) and occupied almost all the Kandi areas beyond the plain and flat sites (Techno Economic Survey of J & K, 1969).

The increase in the nomad population in Kandi, and in their livestock is insufficient for their needs. There has been the depletion of the pastures both in quantity as well as in the quality, moreover, it has enhanced the soil erosion. Grazing of sheep and goats has proved to be a great menace in this province and needs to be checked (Khan, 1961).

Horticulture

As regards the plantation of fruit trees, it is closely related with that of availability of water, as well as, the suitable land for this purpose. Mangoes grow here in abundance, but the bulk is not of good quality. The other fruit trees which can be cultivated are lemon, papaya and grapes, etc.

Communications

The other problems in Kandi area are with regard to communications. Except a few important roads such as Jammu-Srinagar National Highway which is the life-line of the state, the other important roads are Dhar-Udhampur road, Akhnoor-Chamb road. In the Kandi area, there is no intercommunication with different parts because of other economic factors and so remains cut off.

Another problem in the Kandi area is the inadequate supply of fodder and its quality.

Development

In regard to the solving of the problem of fodder, it may be worthwhile to study the problem properly by having an expert

advice. As most of the people who live are nomads with their sheep and cattle, therefore, the problem becomes more acute.

Industries

Some people in this area earn their living by making shoes and leather tanning. Some people are engaged in making of bricks etc. It is also worth mentioning that the product resin is collected from the trees and feeds the Resin and Turpentine factory located at Miran Sahib.

Drinking Water

Above all due to peculiar soil conditions, there is shortage of water. From centuries the people in Kandi area have been drawing drinking water requirements from Kutcha ponds where water could be stored up during the rainy season. The ponds used to cater to the needs of human beings as well as cattle. It caused diseases due to unhygienic conditions. The ponds would dry up during the summer season and much energy and time of the people living in the dry belt would be wasted in fetching water for drinking purposes. They had little time to attend to the profitable occupations and thus caused economic backwardness. But to combat this problem, water supply schemes like tube-well installations have already been launched.

Suggestions

In Kandi area the adequate supply of electricity at high voltage to run tube-wells and irrigation facilities can transform the shape and economy of the area. The problems have been already discussed and can be overcome by the construction of link roads, the supply of electricity, cultivation of orchards which can suit the area and strict regulation on the felling of trees which cause soil erosion, thereby causes sheet and gully erosion as well. This can be arrested by preserving forests.

The education of the children on a new pattern and adequate medical facilities can prove quite useful in the area. As the area is arid, dry type of farming at suitable places and the irrigation from feeder canals from the perennial rivers is needed. However

the ambitious Ravi Canal Project which will involve a cost of Rs. 29.04 crores will be completed in a few years. The 100 km canal will irrigate 1.5 lakh acres of land in the Kandi or perennially dry belt in Jammu Division, (Saraf, 1973). It is expected that 1.5 lakh tonnes of food grains, 84,000 tonnes of vegetables and 1.5 lakh tonnes of fodder will be produced.

With regard to animal husbandry sheep breeding, poultry farming and bee-keeping can be beneficial which can go a long way in providing employment to the people of the region. Improved breed of cattle of sheep and goats can enhance the economy of Kandi areas.

Conclusion

Natural environment has been responsible mainly for creating the conditions leading to the Kandi conditions of the area under discussion. Various problems have accordingly risen which need to be solved on priority basis with a socio-economic scientific approach. Latest methods of forestation, cattle breeding, digging of wells and proper communications will go a long way towards changing the Kandi conditions and the area can be turned into one of the good places for habitation and production.

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Saffron Cultivation in Kashmir— Prospects and Problems

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A balanced regional development demands a strategy in which along with industrial growth, agriculture is to be transformed. In the process of agricultural development the role of commercial crops is always vital as they provide the required money for the extension of infrastructural facilities. Moreover, under certain geo-ecological settings, cash crops are more remunerative than cereals. In fact, in many areas commercial crops have helped in overcoming many of the socio-economic problems. In the Valley of Kashmir, some of the experts believed that saffron cultivation, its diffusion and spread is the panacea to under development and backwardness.

In the present paper an attempt has been made to examine the agro-climatic requirements of saffron, its diffusion, concentration, ramification and the problems associated with its cultivation. The carriers and barriers of its diffusion have also been elucidated to ascertain the future projection of its areal sprawl and production pattern. The paper is based mainly on field work conducted by the author from 1981-84.

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Apart from socio-technological factors the geo-ecological conditions play a determining role in the cropping patterns of a geographical unit. This level of physical determinism is even more conspicuous in the semi-closed ecosystem of Kashmir Valley. The major environmental factors which have close bearings on saffron growth, development and yield are temperature, precipitation, soil, water-table and aspect of slope.

Climatic hazards prove very distinctive and detrimental for saffron cultivation. The extreme cold and scorching heat are unfavourable whereas sub-tropical to temperate climates are credited for its rich growth. A study of spatial distribution of saffron growing areas show that the plant grows in climatically less homogeneous region with high variation in altitude, temperature and humidity. During the six months period (March 15 to September 15) an optimum of twelve hours sunlight period is essential where as the required temperature should be between 20°C—33°C. During August to October high relative humidity effects adversely, both the quality and quantity of produce. The plant needs different temperature and moisture condition, at different stages of its growth. Winter and spring rains are essential and highly beneficial for vegetative growth and reproduction of saffron corms. A good shower during August-September and the absence of frost in October-November are conducive for higher saffron returns. Thus the success of saffron crop largely depends on the timely occurrence of rains as even a slight fluctuation in the normal distribution of rains may reduce the production of saffron. In order to overcome weather hazards phosphates enforced during the early spring season may improve hydration in the corms to resist delayed rains and drought.

Saffron requires a well-drained light loamy *Karewa* soil. It thrives well in lacustrine, alluvial deep soils which are rich in humus and free from stones. It seems to demonstrate preference for siliceous, argillaceous, ferruginous and chalky pedological formations because such soils are usually dry. The calcium containing soils are more ideal as they have the added ability to decompose organic matters easily. Highly fertile soils are less conducive as they increase only the vegetative part of the plant. The required pH value should be neutral to moderately

alkaline i.e. 7.5 for a balanced fertility cycle of the soil, the application of sulphate ammonia, superphosphate or even potassium nitrate and ordinary farm-yard manure is essential. A dose of 40 kg N_2 and 50 kg $P_2 O_5$ per hectare is an optimum dosage. This much nutrient value can be available from about 50 kg of urea and 110 kg of D.A.P fertilizer. Half of urea and full dose of D.A.P. may be applied during August-September and the rest of urea during March-April for a rapid corm multiplication and keeping the soil in a loose form, 14—20 tonnes of well decomposed F.Y.M. is useful to apply in one hectare of land.

Slope, gradient and altitude are also the major limiting factors for the cultivation of saffron. Water-logged depressions and high elevations are unsuitable for its diffusion. If intensity of erosion is controlled then it can be grown on steep slopes also. Regarding the water-table requirements it has been observed that the water-table should be between 2.5 to 7.5 metres.

Among the socio-cultural factors, the economic condition of the farmer plays a vital role in the adoption and spread of saffron. Its cultivation requires major input investment in the first year, and for the subsequent three years, the agricultural return is quite meagre. The inadequacy of funds may hamper the investment pattern and consequently the poor farmers feel hesitant in its adoption. Further, due to the mass level illiteracy, the process of diffusion is slow and substantial area of the Valley is lying unutilized or under utilized.

Saffron is peculiar in its process of cultivation. Ploughing starts in the month of April and the soil is repeatedly ploughed with a depth of 20—30cm at an interval of 10—15 days. The field is thoroughly ploughed and is repeatedly cleared of weeds which may hamper the proper growth of saffron crop. This operation lasts upto the end part of August. In September, seed corms which are global in shape, approximately 25 cm in diameter and weighing only to some grams, are planted in 15—20 cm wide furrows at 8—10 cm in depth. The furrows are opened by a plough and the field after sowing is divided into six feet wide strips, 15 cm deep and 30 cm drainage channels are made between the two strips and just like a chess-board is

prepared. The rectangles thus formed are given a particular shape—high in the centre and sloping all sides.

Intensive hoeing at least twice in a year of a saffron plot starts from the second year of its introduction. First hoeing generally takes place in June breaking the upper crust and encouraging the aeration. The second hoeing takes place in August-September in which drainage channels are repaired. This process continues till the soil gets congested due to corm reproduction which is identified by diminishing returns. Normally from 10th—12th year dishoarding takes place and the dishoarded seed corms are re-planted in a fresh plot while the original plot is kept fallow for one year or rotation of crops takes place just to regain its fertility. In the next year the dishoarded plot is again brought under-saffron cultivation and the procedure is the same as for a fresh plot.

The process of flower picking starts in the month of October-November. Daily flower picking, soon after the dew disappears and before the sun gets hot, is compulsory because flowers when exposed to sunlight lose essential volatile oil necessary to impart fragrance and also the colour of stigmas gets faded. Then the flowers are dried in the sun, lightly beaten with sticks and placed through coarse sieves for grading the three varieties i.e. *Shahi*, *Mongra* and *Lachha*.

So far as spatial variation in area, production and yield of saffron is concerned, it is patchy in cultivation, limited mainly to karewas and more concentrated in south-central part of the valley. It is cultivated in the fourteen tehsils of five districts. It has been diffused in 184 villages i.e. 6.25 per cent of the total settlements of the valley occupying an area of 31502.27 acres, meaning thereby 3.35 per cent of the cultivated area of the valley. It gives an annual production of 1460.14 quintals of dry saffron. In monetary terms it equals to about Rupees one hundred crores—a great contribution towards state economy. A tehsilwise distribution reveals that only Pulwama tehsil has 73.29 per cent of the total saffron growing area of the valley contribution about 72.17 per cent of the total production. The remaining thirteen tehsils share 26.71 per cent of saffron area contributing 27.83 per cent of the total production. The tehsilwise variation in yield level reveals that Doru and Pahalgam have the lowest

yield level of saffron. Both these tehsils occupy 0.06 per cent of the total saffron growing area and 0.02 per cent of the total production. Under the medium yield level we have tehsils like Bijbehara, Badgam, Kulgam, Beerwan and Ganderbal which have a total percentage area of 2.69 corresponding to a percentage production of 1.79. The other tehsils which come under the high yield level are Pulwama, Chadura, Srinagar, Tral, Shopiyan, Anantnag and Baramulla. The total saffron growing area of these tehsils comes to 97.25 per cent whereas the total production is 98.19 per cent of the total valley production (Table 1).

TABLE 1

Saffron Area, Production and Yield, Tehsilwise Year : 1983

<i>Tehsils</i>	<i>Area</i>		<i>Production</i>		<i>Yield</i>	<i>Yield</i>
	<i>Acres</i>	<i>%age</i>	<i>Quintals</i>	<i>%age</i>	<i>Kg/Acre</i>	<i>Level</i>
Anantnag	232.25	0.73	11.32	0.88	4.87	High
Baramulla	151.99	0.42	6.90	0.02	4.47	-do-
Chadura	3726.67	11.83	193.52	13.36	5.19	-do-
Pulwama	23070.52	73.29	1054.69	72.17	4.57	-do-
Shopiyan	613.79	1.95	27.81	1.90	4.53	-do-
Srinagar	1973.51	6.26	98.87	6.88	5.00	-do-
Tral	867.48	2.75	40.49	2.81	4.71	-do-
Badgam	534.47	1.69	17.67	1.31	3.30	Medium
Beerwan	4.85	0.02	0.18	0.01	3.71	-do-
Bijbehara	137.02	0.43	4.21	0.29	3.07	-do-
Ganderbal	10.23	0.04	0.25	0.08	2.44	-do-
Kulgam	160.55	0.51	3.95	0.28	2.46	-do-
Doru	17.84	0.07	0.26	0.01	1.45	Low
Pahalgam	1.10	0.01	0.02	0.01	1.81	-do-
Total						
Average	31502.27	100.00	1460.14	100.00	3.68	

Source : Compiled and computed by the author on the basis of field study and the data collected from tehsil headquarters.

The temporal variations in saffron reveal that the recent fruitful experiments conducted in various parts provided stimulus

for its spread and expansion. In fact, in 47 per cent of saffron growing area its cultivation has been adopted only after 1982. During the last decade it experienced three well-marked periods of growth. These stages may be termed as (i) slow growth period, (ii) medium growth period and (iii) high growth period. The first stage covers the period from 1973-77 in which all the three variables i.e. area, production and yield showed a slow progress. In the medium growth period (1977-81) the areal sprawl only in four years was almost double and the production multiplied by 5.95 times whereas the yield level increased by 2.04 times over the base year. In 1981-83—the period of high growth—all the three variables made abrupt positive change. Area increased by 1.87 times, production showed an enhancement of 2.33 times and yield level also experienced a remarkable progress over the base year (Table 2).

TABLE 2

Growth in Area, Production and Yield of Saffron 1973-1983

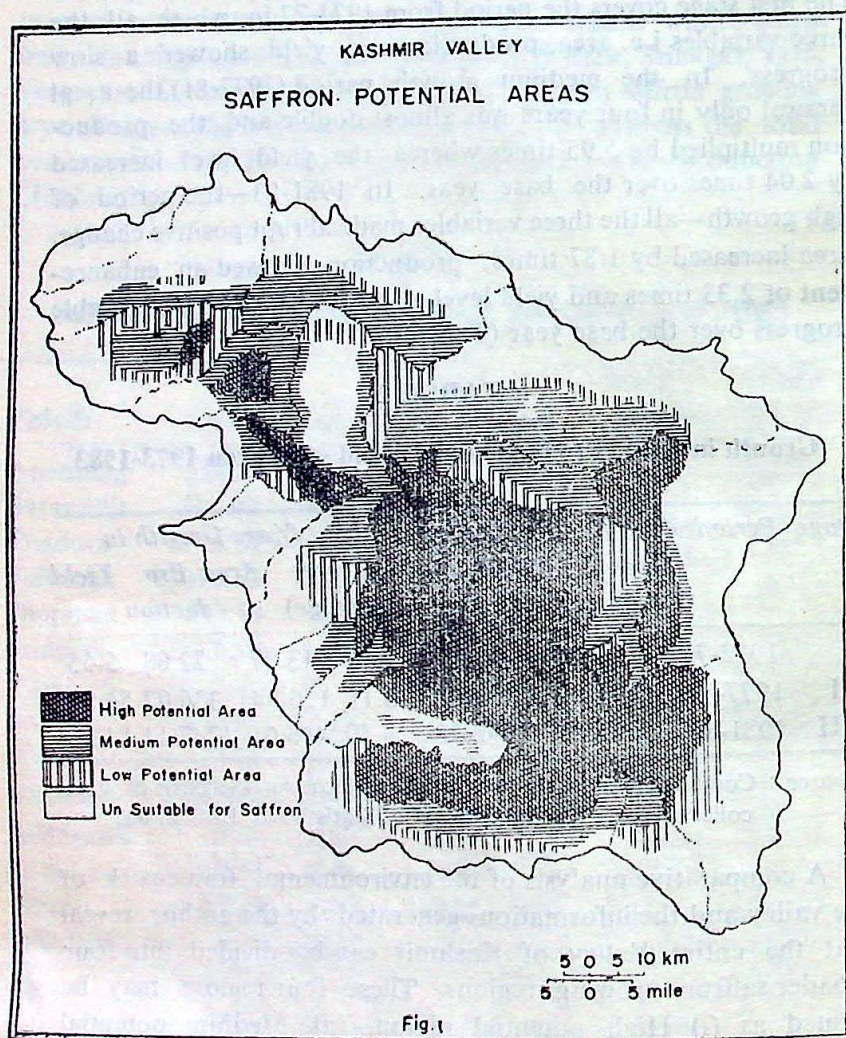
Stage	Period	Area in Acres (Average)	Production in Qtls. (Average)	Yield Kg/Acre (Average)	%age Growth in Area Pro. Yield duction
I	1972-77	4967.20	95.37	1.92	13.97
II	1977-81	11193.60	353.61	3.15	156.84
III	1981-83	23797.40	1092.38	4.59	446.05

Source : Compiled and computed by the author on the basis of data collected from the Department of Statistics & Evaluation.

A comparative analysis of the environmental framework of the valley and the information generated by the author reveal that the entire Valley of Kashmir can be divided into four broader saffron growing regions. These four regions may be termed as (i) High potential region, (ii) Medium potential region, (iii) Low potential region, and (iv) Areas not suitable for saffron cultivation (Fig. 1).

The high potential region sprawls in the tehsils of Pulwama, south-western parts of Srinagar, Western half of Tral, entire Bijbehara excluding its north-eastern rimlands, north western

belt of Anantnag, north-western areas of Pahalgam, northern half of Chadura, north-eastern portion of Badgam, north-eastern rimland of Baramulla, central portion of Sopore and eastern rimlands of Handwara.



The medium potential region stretches over the north-eastern parts of Srinagar tehsil, south-eastern parts of Tral, north-eastern rimland of Bijbehara, central parts of Shopiyan and Chadura tehsils, central-eastern parts of Kulgam, northern parts of Duru, south-eastern Pahalgam, central-eastern parts of Badgam, northern end of Beerwan, south-eastern including

central parts of Genderbal, surrounding areas of Wular lake excluding northern parts of Sumbal, central parts of Baramulla and Handwara tehsils, the rimlands excluding north-eastern and south-western rimland of Sopore, southern half of Bandipore and border areas touching Handwara with Kupwara tehsil. In some of these tracts water-logging problem is however hampering the spread of saffron.

The low potential region has some seasonal water-logging problem and requires the application of manures and fertilizers to keep the fertility cycle of the soil in balance. Tehsilwise distribution of this region shows that it covers the north-eastern part of Tral, peripheries of Kulgam eastern and western rimlands of Duru, central and north-south portion, of Anantnag, western rimland areas of Beerwan, north-eastern part of Genderbal, northern part excluding its rimland area of Sumbal, some southern and western portion of Baramulla, central portions of Bandipore, areas surrounding central Handwara, isolated patches of Kupwara and small tracts of Karnah tehsil. The remaining area of the valley is not conducive for the diffusion of saffron.

On the basis of the factors, other than environmental conditions, entire valley may be divided into the following categories of saffron potential:

1. Areas of high yield and high spread;
2. Areas of high yield and low spread;
3. Areas of low yield and high spread,
4. Areas of low yield and low spread.

The major concentration of saffron is on the Pampore karewa in which it has high yield and high spread. On this karewa there is little scope for expansion in the area of saffron, as its frontier has already been pushed to the limit. The high yield and low spread areas lie in the tehsils of Baramulla, Anantnag, Shopiyan, Tral, Srinagar and Chadura. It is in these tehsils in which efforts need to be made to increase area under saffron cultivation. The areas of low yield and high spread are confined to the tehsils of Pulwama, Bijbehara, Kulgam and Badgam. Here the output per unit area can be

enhanced by adequate and timely application of the required inputs, as expansion in the area is difficult without heavy labour and capital investment. Under the category of low yield, and low coverage, both the expansion of area and increase in yield, are possible. The tehsils under this category are Doru, Ganderbal, Beerwan and Pahalgam, which demand immediate attention of planners and extension service departments.

Conclusion

The main findings of the study reveal that saffron has proved itself more remunerative crop than any cereal or non-cereal crops grown in Kashmir Valley. It has played a significant role in transforming the socio-economic structure of saffron growers in particular and the state in general. The abiotic setting of the Valley do not pose any limitation for its diffusion but the areal sprawl is limited due to socio-cultural and technological factors. On the basis of environmental framework of the Valley, 66 per cent of the cultivated area has been found conducive for saffron diffusion, whereas 25 per cent of the cultivated area can be brought under saffron cultivation with the help of new technological diffusion. Only nine per cent of the cultivated area is not suitable for its diffusion. In this context the role of planning is supportive and indirect but the essential responsibility for moulding the climate of opinion in favour of saffron cultivation lies with the extension service workers and the co-operation available from political leadership and planners.

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Income and Occupational Structure of Ladakh—A Case Study of Leh

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ONE of the major problem confronting developmental efforts in the last three decades, is continuing high incidence of poverty and unemployment among most of the Afro-Asian economies including India. Growth process which these developing economies have undergone have created more of inequalities in the distribution of income, wealth and assets though these are aimed at reducing the gap between 'haves' and 'have nots'. Developmental strategies pursued until now are pronouncedly at variance with objective of 'social equality and justice'.¹ However, in recent years problem of income, income distribution coupled with unemployment issues have assumed focal attention of policy planners and other official agencies. The recent upsurge of concern in this regard has not only led to taking keener interest in the pattern and determinants of income distribution but has also led to examine the impact that income distribution produces on unemployment, technology, consumption and production pattern.²

Distribution of Income becomes fundamental in so far it is egalitarian and inequality in it being considered as a social

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evil. As such it becomes major theme for discussion both at theoretical and policy levels,³ independent of any other facts to which an economy may be related to. It thus becomes imperative that an indepth analysis of income distribution is made so as to assess the impact it exerts through the nexus of production, employment, technology and consumption cycles for ascertaining implications of income inequality on poverty and growth. A more pronounced income inequality exhibits higher income pattern accompanied by relatively mass poverty resultant in most of the goods and services being consumed by high income strata thus depriving sizeable section of masses of such facilities. Further more inequality can also directly result in perpetuation of absolute poverty to the extent the major chunk of income is gobbled by a few affluent ones though the average income levels are significantly high.

Given the premise that a major objective behind seeking a shift in patterns of income distribution and creation of better job opportunities, present study attempts at an examination of the inter-relationship between patterns and composition of income, income distribution and employment structure with a special reference to Leh, Ladakh. Such a study becomes even more important in case of hilly areas wherein backwardness is usually viewed within the framework of the paradigm of environmental determinism and as such backwardness is essentially considered as a function of environmental constraints. The backwardness of regions should be rather viewed as a component of the system of regional disparities entrenched in the politics that had been brought under the erosive influence of the colonial mechanism⁴. Such a system of spatial structure persists even now though in a modified form. Hinterland regions of high altitude mountainous area like Ladakh are confronted with natural constraints as well, which compounds and aggravates the vicious circle of poverty and backwardness. Basic natural constraints in these regions take form of hazardous mountainous terrain, and the scarcity of water. Second major constraint is that of cold and arid high altitude climate.⁵ To make thus any positive efforts to break off and alleviate the backwardness and poverty in such regions a concerted inventory and identification of the regional resources endowments

with their utilisation and distribution should be made. Thus this paper attempts at :

- (i) To study the nature of occupation and influence it exerts on local economy ;
- (ii) To study the distribution of income occupationwise, familywise and castwise for understanding dynamics of income flow ;
- (iii) To study the sectoral contribution to the income generation of the local economy for identifying their relative importance ;
- (iv) To study the class distribution of income among the various households in order to establish concentration of income ;
- (v) To determine levels of income in equalities by using Lorenz curve, Gini concentration ratio and analysis of variance method.

Ladakh is situated on highland crystalline mass of trans-Himalayan Zone and is confronted with multiple problems quite specific to it. Ladakh is one of the largest districts of Jammu and Kashmir State with population density under 2 persons per square kilometre, because of extremely inhospitable conditions stemming from its being an arid, frozen waste land and also because of the problems of high altitude ranging from 9000' to 15,000' in populated areas. The sub-zero winter temperature is as low as -30°C .

Leh is one of the two districts of Ladakh and until the middle of 1950's it was the centre for the entreport trade by virtue of being at cross-roads of trade routes from east (Lhasa), West (Srinagar and Baltistan), North (Yarkand), and South (Bisahar and Hoshiarpur).

Leh town was selected as an area of study as it was observed after discussions with both local and government agencies that this town witnessed a phenomenal socio-economic transition after 1962 Indo-China war. Stratified random sampling technique was used to obtain cross-section data from 180 households by using a questionnaire in direct interview method. For this purpose four villages. Thiksay Pitak, Shai and Spituk were

made the samples of study and surveyed in 1980. The town economy has been divided into two broad sectors i.e. farm economy and non-farm economy. Data collected has been treated in simple tabular analysis with Lorenz curve, Gini concentration ratio and coefficient of variance for determining extent of income inequalities.

In the following discussions magnitude and predominance of income inequalities and occupational structure will be discussed.

TABLE 1
Occupational Structure and Income Distribution

<i>Nature of Occupation</i>	<i>Income Distribution (in Rupees)</i>	<i>Percentage of total income</i>
Govt. Sector	915,422	38.791
Farming	668,925	28.345
Business	534,070	22.631
Chang	234,050	9.917
Misc.	7,400	0.313
Total	2,359,867	100.000

Table 1 shows the general occupational structure and income of the various sectors of the economy. It can be seen from the Table that although Ladakh is an agricultural district yet in Leh it is non-agricultural sector which dominates the inter-play i.e., Government sector receives 38.79% of the total income and business and farming sectors are also most evenly placed as their share of total income is 22.63% and 28.34% respectively. The obvious reasons for Government sector being the leading sector is because of Leh being the Headquarters of District Ladakh and as such all the major offices of State and Central Government are stationed here, thereby increasing the working population percentage of the Government sector to the total working population coupled with the fact that it acts as a major distribution centre for army and locals in this region. Significant contribution is also of 'Chang' which is local brew made out of barley and is sold on commercial basis.

Table 2 gives the distribution of income pattern occupationwise, family size and religionwise. It is quite clear from the Table 2 that Buddhists constitute 81.68% of the total population followed by Muslims 15.55%, Hindus 1.11% Christians 1.11% and Sikhs 0.55%. Reasons for Buddhists being single largest community is because by about 14th century Buddhism had quite prevailed in Ladakh, and it is much later that other religions crept into this region i.e., mainly after the fall of Western Tibetan Empire in 1840—Ladakh became dependency of State of Kashmir⁶ thereby, acquiring heterogeneous nature as it opened up to northern Indian provinces. Buddhism's spread in Ladakh is also referred to by Fa Hien (A.D. 390—414).⁷

Again from Table 2 it can be observed that family groups having the size between 5-9 class constitute 56.11% of the total households followed by family groups falling between 0-4 class by 34.44% and smallest group was of family of 10 and above constituting 9.45% of the total households. It becomes clear from the Table that usual family of Leh town is neither too small or too large.

Table 3 gives the class distribution of the total families as per their annual incomes. Total households (180) have been divided into 10 classes in descending order. 10th and 9th lowest groups i.e., (4000 to 6000) class and (6001 to 8000) class constitute 35% of the total households, while 1st, 2nd and 3rd groups account for over 22% of the total households. The results, that can be deduced from the Table 3 is that the economy is predominantly divided into poor and very rich sections of the society although middle income group is dominant because of predominance of Government sector in Leh.

Table 4 gives the overall per capita gross income of Leh which has been worked out to be Rs. 2097.6596. While dividing all the households into five groups in descending order according to their economic status, the highest 20% group i.e. 1st group has Rs. 3509.7915 per capita income and the lowest group i.e., 5th group has Rs. 1082.0234 per capita gross income which is 51.58% less than the overall per capita income, reflecting that 40% of the households have very weak economic status,

TABLE 2
Income Distribution with Respect to Size of House-holds (H.H.)

House hold size and distribution class-wise.	Total	10 and above	0-9	0-4
No. of H.H.	2	—	—	2
No. of persons	4	—	—	4
No. of H.H.	28	5	19	4
No. of persons	195	48	137	10
No. of H.H.	147	12	82	53
No. of persons	922	138	643	141
No. of H.H.	2	—	—	5
No. of persons	6	—	—	6
No. of H.H.	1	—	—	1
No. of persons	3	—	—	3
No. of H.H.	180	17	101	62
No. of persons	1130	186	780	164
Farm (Rs.)	661925	76420	494885	97628
Business (Rs.)	534070	101430	390840	141800
Government (Rs.)	915452	112772	583806	218844
Chang (Rs.)	234050	10200	118440	105410
Misce. (Rs.)	7400	799	4428	2173

TABLE 3

Class Distribution of Income

<i>Class Distribution (Rs.)</i>	<i>No. of House- holds</i>	<i>% of total House holds</i>
25,000 & above	20	11.11%
20,001 to 25,000	11	6.11%
18,001 to 20,000	9	5%
16,001 to 18,000	15	8.33%
14,001 to 16,000	12	6.66%
12,001 to 14,000	11	6.11%
10,001 to 12,000	19	10.55%
8,001 to 10,000	20	11.11%
6,001 to 8,000	27	15%
4,001 to 6,000	36	20%
Total	180	100%

TABLE 4

Per Capita Gross Income

<i>Group (of 20% each)</i>	<i>Per capita gross income (over all)</i>	<i>Per capita gross Income (Within each group)</i>
1st 20%	Rs. 2097.6596	Rs. 3509.7915
2nd 20%	-do-	2016.4928
3rd 20%	-do-	1767.7143
4th 20%	-do-	1478.2247
5th 20%	-do-	1082.0234

It is quite apparent that strongholds of the economy is in the hands of richer strata of society, which can also be evidently seen in Table 5 below.

TABLE 5

Income Distribution in group of 20% each

<i>Group of 20% each</i>	<i>% of population to total popu- lation</i>	<i>Income (Rs.)</i>	<i>% of total income</i>	<i>Cumulative percentage</i>
1st 20%	15.20	185026	7.89	7.84
2nd 20%	15.82	263124	11.15	18.99
3rd 20%	19.28	361894	15.33	34.34
4th 20%	24.55	556552	23.58	57.93
5th 20%	25.15	993271	42.09	100.00

Table 5 reveals that 5th top bracket constitutes 25.15% of the total households and shares 42.09% of the total income, while the lowest group i.e. 1st 20% constitute just 15% of the total population and share 7.84% of the total income. Income inequality in this backward region as such seems to be highly skewed in favour of the well to do and affluent families, who apparently have monopolised economic scenario of this region. Entrepreneurship and investable capital is essentially centralised in few families. Lower section of society has been by design kept away from sharing the benefits of economic transition by isolating them from participating in such activities.

In Table 6 total house holds have been divided into (I) agricultural (II) non-agricultural sectors and respective allied occupations, as such both sectors have been divided into 5 equal groups (of 20% each) according to their economic status. It becomes clear from the table that 5th highest group receives maximum of both farm and non-farm income. The obvious reasons for this phenomena is that richer strata of society had the investable surplus capital available in wake of a sudden economic transformation after 1962 war. As such other stratas of society could not benefit from such a exogenously induced change. Total income has been taken to comprise agricultural as well as non-agricultural incomes as non-agricultural income too affects consumption level of house holds considerably. Although agricultural sector is predominant sector but it has not contributed to the income generation proportionately to its

TABLE 6
Gross Income Distribution Farm/Non-Farmwise

Group of 20% each	Farm Income (Rs.)	% of Farm income to total income	Non-Farm Income (Rs.)	% of Non-farm income to total income	Total income (Rs.)
1st 20%	297085	29.9097%	696186	70.0903%	993277
2nd 20%	191150	34.3453%	365402	65.6547%	556552
3rd 20%	105990	29.2875%	255904	70.7125%	361894
4th 20%	47000	17.8623%	216124	82.3177%	263124
5th 20%	30170	16.3058%	154856	83.6942%	185026

size. Business sector and Government sector have emerged as the leading sectors. Farming sector though being primary sector is inhabited by adverse natural constraints which have not allowed it to grow and prosper as this region is dry and semi-arid. As such other man-induced activities have had a much favourable response given the spatial structure of this region.

To measure the extent of disparities in income distribution, based on the above data Lorenz curve drawn for the farm sector and non-farm sector respectively (Fig. 1). The cumulative percentage of households (total persons in case of per capita analysis) of the different segments have been depicted on

GROSS INCOME DISTRIBUTION

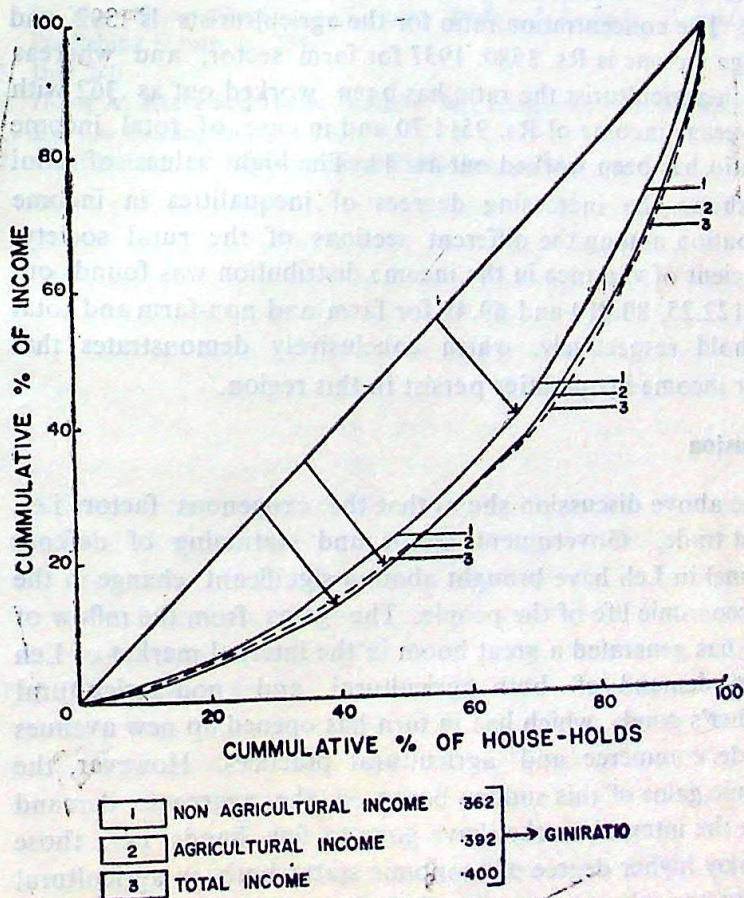


Fig. 1.

X-axis, while corresponding cumulative percentage of income has been shown on Y-axis. OP drawn at 45 degrees is line of equal distribution. Lorenz curve of income distribution in case of farm sector was located at a distance far from the line of equal distribution showing largescale income inequalities among the farmers, while at the same time income inequalities are much less in case of non-agriculturists, as their total income line is very much inclined towards the line of equal distribution.

Again, the extent of inequalities has been measured by calculating Gini's concentration ratio as well. The ratio is derived by dividing the area of the curve below the egalitarian line by area of the right angled triangle. The above results have been further substantiated by the values of the Gini's concentration ratio. The concentration ratio for the agriculturists is .392 and average income is Rs. 3580. 1937 for farm sector, and whereas for non-agriculturist the ratio has been worked out as .362 with the average income of Rs. 9511.70 and in case of total income the ratio has been worked out as .40. The high values of Gini ratio shows the increasing degrees of inequalities in income distribution among the different sections of the rural society. Coefficient of variance in the income distribution was found out to be 122.25, 80.019 and 69.49 for farm and non-farm and total household respectively, which conclusively demonstrates that greater income inequalities persist in this region.

Conclusion

The above discussion shows that the exogenous factors i.e., Tourist trade, Government sector and stationing of defence personnel in Leh have brought about a significant change in the socio-economic life of the people. The gains from the inflow of money has generated a great boom in the internal market of Leh for the demand of both agricultural and non-agricultural consumer's goods, which has in turn has opened up new avenues for trade, commerce and agricultural practices. However, the economic gains of this sudden boom in the aggregate demand level in the internal market have gone to few hands i.e., those who enjoy higher degree of economic status both in agricultural and non-agricultural sectors. This has definitely shown that

power and economic concentration is vested in the upper strata of the society in Leh town.

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Convention Tourism : A New Potential

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THE beautiful valleys, shimmering lakes, snowcapped mountains and excellent climatic conditions as well as opportunities for trekking, fishing skiing and shopping attract tourists to the valley of Kashmir from the world over. Tourism industry in Kashmir has tremendous scope for expansion and should very obviously be encouraged. We can effectively persuade it by a change of approach and emphasis. The investment policy of the Government needs to be designed in such a way as to deploy our own resources in creating infrastructure, promotion and publicity while private sector be encouraged to invest in accommodation and entertainment facilities. Due to unique environment, the State can do well to promote specialised tourism. Both in international and domestic market there is great desire and interest in the affluent tourists to combine their holiday with business. Therefore, the convention tourism is developing at a very high speed. The convention complex set up in certain European countries are fetching good revenue for these countries. The Complex in Berlin fetches 20 million German Marks a year.

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Convention Tourism is professional travel with a specific purpose and separate it from vacation or recreational travel. International Conventions migrate from country to country. The participants are usually influential and have decision-making position and therefore, actively promote tourism. The participants do not travel on their own savings but their costs of travel, accommodation, entertainment are covered by the sponsoring company or institution. Therefore, their spending power increases considerably. Since most of their costs are covered, the participants spend relatively more in shopping and entertainment. Such delegate tourists are considered good spenders. The present International Convention market is very large and has a very big future growth potential. Tourism is labour intensive and covers many professions. Convention Tourism requires professionalism and creates new professions. Therefore, this type of tourism is more productive than usual tourism.

Promotion and Publicity

Lately, Convention Tourism has gained lot of importance. Air India has a special cell to handle convention tourism. International Congress and Convention Association Amsterdam specialises in handling of Conventions and Exhibition arrangement. It offers expert services in all aspects of Convention and Exhibition Organisation including travel, supplies and other facilities. Therefore, Convention Tourism is more productive than other sectors of tourism due to its high yield.

Presently the approximate average cost of the participants of an International Convention is 140 to 160 US Dollars in foreign countries. In Kashmir the cost will relatively be much lower in comparison to other countries. This will help us in attracting Convention Tourism, which is bound to strengthen the economy of the State.

International Congress and Convention Association offers membership to Travel Agents, Airlines, Transport Company's Hotels, Congress Convention and Exhibition Centre. Presently there are over 200 members representing 67 countries. The membership of ICCA plays a great role in promoting of any convention centre in any part of the world.

Of late the Government, of Jammu and Kashmir have embarked upon an ambitious programme of getting benefited

by the Convention Tourism. Expert advice has been sought to organise and sell this type of Tourism. In this connection the State Government invited Mr. D. Hellstedt, Managing Director, Stockholm Convention Bureau. Stockholm in 1976 who has given his recommendation in regard to management and marketing of the Convention Complex set up at a cost of Rs. 10 crores on the banks of Dal Lake. The entire complex will have three Department-Convention Centre, Common Service and Hotel Block built by Air India through Hotel Corporation of India which will have 275 rooms with five star amenities. It would be interesting here to state that the State Government sent a team of senior officials and public men to some of the European countries, England and USA to study the marketing and sale of convention tourism and matters allied thereto so as to enable the State Government and Air India to formulate a plan of action for attracting international conventions to the Convention Complex at Srinagar.

There is no denying the fact that tourism in Jammu and Kashmir constitutes a core sector and no headway has so far been made either in the State or in the rest of the country to market this type of tourism. The fact remains that we have not taken off the ground in the field of convention tourism. It has been felt by the experts that we don't have any Convention Centre in this country of the international standard and specifications except the Vigyan Bhavan in Delhi. But the Government of India because of its own requirements has not been able to sell Vigyan Bhavan on commercial lines. It was in this context that the need of setting up a Convention Complex at Srinagar having all the facilities needed by international congresses and conference with simultaneous translations in at least six language with appurtenant Committee Rooms, Conference Rooms. Dining Halls, Lounge Restaurants, Parking facilities and a host other amenities. In order to meet the requirements of residential accommodation for the visiting delegates the State Government succeeded in persuading Air India to agree to the setting up of a 5 star Hotel as mostly captive to the Convention Centre in Srinagar.

In October, 1980 a three-member team headed by the Finance Minister, Shri D.D. Thakur was sent to visit some of

the West European countries England and USA to study the marketing and sale of the Convention tourism. This team visited the following countries.

1. Frankfurt 2. Berlin 3. Amsterdam 4. Copenhagen
5. London 6. Hague 7. New York 8. Chicago 9. Washington
10. Paris 11. Geneva.

Through the good offices of the Tourism Ministry Government of India, visits of the delegation were organised with the organisations and people connected with the business of international congresses and conventions. These visits have been organised with the International Centres at Berlin, Amsterdam, Hague, London, Chicago. The delegation identified the following areas of study :

- (a) to study the functioning of the international congress centres in these countries ;
- (b) to understand and study the sales and marketing mechanism and network for attracting international and national conventions to these countries ;
- (c) to study existing arrangements of the Govt. of India in relations to the promotion of tourism in Jammu and Kashmir in particular and whole of India in general ; and
- (d) to see to what extent can we follow the pattern of sales and marketing of these centres in relation to our own centre.

The report of the team is under consideration of the Government.

Training

Immediate steps have to be taken for training of the managerial cadre. Managing Directors/Executive Directors have to be trained not only in Management of the Convention Centre but for marketing and promotion of the Centre, ICCA assists the members in training for the management of Convention Centre. Stockholm Convention Bureau, Stockholm. Sweden provided such service. In this connection Mr. D. Hellstedt, Managing Director of the Bureau visited Kashmir in 1976 and has given

his recommendations for management. marketing of the Centre, extensive promotional and marketing tours have to be taken by the Managing Directors/Executive Directors to explain the facilities available at the Centre.

The need has arisen that the Government should make immediate arrangement to introduce the Convention Complex to the outside world on audio-visual network followed by a sustained and vigorous publicity campaign. Since the Air India is also directly involved in the success of the Centre and the Five Star Hotel, the arrangement can be that Air India provides free passage to the people connected with the sale of convention tourism and State Government extend hospitality to the invitees. This will help in projecting Srinagar Centre generally amongst the people of these countries and particularly among the representatives of the international associations.

It may not be out of place to mention here that to run the Convention Centre here, joint efforts have to be made both at State as well as Central Government level apart from Air India and Indian Airlines. The coordination with Air India, Indian Airlines, Road Transport Corporation and other State Departments is very essential for smooth running of the Centre which was inaugurated by the Union Minister for Tourism and Civil Aviation Shri Khursheed Alam Khan, this summer when a 3-day conference of Indian Travel Agents Association was held.

Tourism being the mainstay of our economy has always been given priority. During the 6th plan period an outlay of Rs. 2200.00 lakhs had been earmarked for this purpose. Out of which so far Rs. 2178.26 lakhs have been spent. For the 7th Plan under this sector an outlay of Rs. 5562.60 lakhs has been proposed which itself signifies the importance it deserves.

It would be in the fitness of things if the Government makes a search for the talent to handle tourism industry. Of late our youth have started delving into this subject and have studied tourism as an academic subject. These youngmen need to be encouraged to land in the organisation who handle tourism one way or other. In the interest of furthering the economy of the State the Government cannot apparently afford to offer jobs concerning tourism like leaves and fishes. The unfortunate part is that the sharks of tourism organisations do not encourage such youngmen.

